AR TARGET SHEET

The following document was too large to scan as one unit, therefore, it has been broken down into sections.

DOCUMENT #:	01-RCA-227
TITLE:	Quarterly Notification of Class 1 Modifications to Hanford RCRA Permit Dangerous Waste Portion Quarter Ending March 31, 2001 Permit Condition I.C.3
EDMC#:	0054868
SECTION:	1 of 2

0054868

Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

APR 10 2001

01-RCA-227

Ms. L. E. Ruud, Permit Specialist
Nuclear Waste Program
State of Washington
Department of Ecology
1315 West Fourth Avenue
Kennewick, Washington 99336

Dear Ms. Ruud:

QUARTERLY NOTIFICATION OF CLASS 1 MODIFICATIONS TO THE HANFORD FACILITY RESOURCE CONSERVATION AND RECOVERY ACT (RCRA) PERMIT, DANGEROUS WASTE (DW) PORTION (QUARTER ENDING MARCH 31, 2001 – PERMIT CONDITION I.C.3)

In accordance with Condition I.C.3 of the Hanford Facility RCRA Permit, enclosed for your notification are the Class 1 modifications to the Hanford Facility RCRA Permit, DW Portion. Modifications this quarter included updating information in the List of Attachments, Part II, and Part III (Enclosure). The List of Attachments Class 1 modifications pertain to Attachment 4. The Part II Class 1 modification pertains to Condition II.A. The Part III Class 1 modifications pertain to the 305-B Storage Facility, Plutonium-Uranium Extraction Storage Tunnels, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, 242-A Evaporator, and the 325 Hazardous Waste Treatment Units. The Class 1 modifications are being made to ensure that all activities conducted are in compliance with the RCRA Permit, DW Portion.

Should you have any questions regarding this information, please contact Ellen M. Mattlin, Regulatory Compliance and Analysis Division, on (509) 376-2385.

Joel Hebdon, Director
Regulatory Compliance and Analysis Division
DOE Richland Operations Office

Richard H. Gurske, Director
Environment and Regulation
Fluor Hanford, Inc.

Roby D. Enge, Director
Environment, Safety, and Health
Pacific Northwest National Laboratory

RCA:EMM

Enclosure:
Quarterly Notification of Class 1
Modifications to the Hanford Facility
RCRA Permit, DW Portion

cc w/encl:
Administrative Record, H6-08
HF Operating Record, G1-27
Ecology NWP Kennewick Library
R. J. Landon, BHI
J. H. Richards, CTUIR
M. A. Wilson, Ecology
S. A. Thompson, FHI
Environmental Portal, LMSI
P. Sobotta, NPT
A. K. Ikenberry, PNNL
R. Jim, YN

cc w/o encl:
M. Anderson-Moore, Ecology
F. W. Bond, Ecology
L. J. Cusack, Ecology
F. Jamison, Ecology
D. R. Sherwood, EPA
R. H. Gurske, FHI
R. D. Enge, PNNL

Hanford Facility RCRA Permit Modification Notification Forms

List of Attachments

Attachment 4, Hanford Emergency Management Plan

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Page 2 of 5: Section 4.0, Subsection 4.2
Page 3 of 5: Section 5.0, Subsection 5.1.1
Page 4 of 5: Section 5.0, Subsection 5.1.2

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Emergency Management Plan	**List of Attachments, Attachment 4**

Description of Modification:

Section 3.0, Table 3-1:

Table 3-1. Memorandums of Understanding

PARTIES	SERVICES/AREAS OF COOPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
State of Washington	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site	Washington Emergency Management Division	None	~~04/10/95~~ 01/01/01	Continue until canceled by either party upon 30 days written notice to the other	RL SES
State of Oregon	Document areas of cooperation between the state of Oregon and RL in the planning for and providing notification and interface in the event of an incident on the Hanford Site	Oregon Department of Energy	None	~~12/22/94~~ 06/21/00	Continue until canceled by either party by written notice to the other Amendments or modifications to this Agreement my be made upon written agreement by both parties to the Amendment	RL SES
Benton County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site	Benton County Emergency Management	None	03/16/00	Continue until canceled by either party by written notice to the other.	RL SES
Franklin County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Franklin County Emergency Management	None	01/20/00	Continue until canceled by either party by written notice to the other.	RL SES
Grant County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site	Grant County Emergency Management	None	03/25/00	Continue until canceled by either party by written notice to the other.	RL SES
Energy Northwest	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site	Energy Northwest Emergency Preparedness	The specific areas of assistance will be provided based upon availability, and are limited to those emergency actions necessary to protect onsite personnel, the public health and safety, and the environment in the event of a major emergency at the Hanford Site or Energy Northwest.	09/07/00	Continue until canceled by either of the parties upon 30 days written notice to the other party.	RL SES
Energy Northwest and HEHF	Treatment of a significantly contaminated and injured person	Energy Northwest Emergency Preparedness and HEHF	None	09/08/00	Continue until canceled by one or more of the parties upon 30 days written notice to the other(s).	RL SES

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
G. B. Griffin	Date	J. L. Spracklen, Jr.	Date 01/10/01	S. Moore	Date	L.E. Ruud	Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Emergency Management Plan	**List of Attachments, Attachment 4**

Description of Modification:

Section 4.0, Subsection 4.2:

4.2 IMPLEMENTATION OF THE RESOURCE CONSERVATION AND RECOVERY ACT ~~EMERGENCY~~ CONTINGENCY PLAN

~~A RCRA emergency is defined as a release, fire, or explosion that could threaten human health or the environment.~~ Documentation to meet RCRA contingency plan requirements must be prepared by certain facilities conducting activities regulated under WAC-173-303 (Washington Dangerous Waste Regulations) in accordance with subsection 1.1. These requirements are incorporated into the Hanford Site's overall emergency planning documentation. Therefore, there is not a specific document titled "contingency plan."

For a facility event, the BED/BW~~IC, in consultation with the respective site contractor environmental single point-of-contact,~~ shall determine whether the ~~incident is a RCRA emergency~~ requirements of WAC-173-303-360(2)(d) were met based upon an evaluation and assessment in consultation with their respective site contractor environmental single point-of-contact. ~~It is the responsibility of the BED/BW/IC to make this determination even though the BED/BW/IC consults with the site contractor environmental single point-of-contact. When this determination occurs, notifications delineated in subsection 5.1.2.1 shall be performed. Notifications described in subsection 5.1.1 may also be required for a RCRA emergency and are determined on a case-by-case basis by the BED/BW/IC.~~

The BED/BW~~IC~~ ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference *to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as* appropriate. These activities must be performed with a sense of immediacy and shall include available information.

~~After gathering appropriate event information, the hazards posed by the event to human health and the environment must be assessed. The assessment must take into consideration the direct, indirect, immediate, and long-term effects of the incident. The assessment should include sources such as Material Safety Data Sheet toxicity and health information and results from any personnel monitoring examinations conducted at medical facilities. These are the types of tools, which will aid in ascertaining the extent in which human health and the environment were threatened.~~

The BED/BW shall use the following guidelines to determine if an event has met the requirements of WAC-173-303-360(2)(d):

(1) The event involved an unplanned spill, release, fire, or explosion;

AND

(2a) The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable), or

(2b) *The unplanned fire or explosion occurred at a facility or transportation activity subject to RCRA contingency plan requirements;*

AND

(3) Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED/BW shall determine, in consultation with the respective site contractor environmental single point-of-contact, if notification to Ecology is needed to meet WAC-173-303-360(2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. The notification process is delineated in subsection 5.1.2.1. Operational Emergency notifications described in subsection 5.1.1 may also be required as determined on a case-by-case basis by the BED/BW.

If ~~assessment~~ review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. *The BED/BW~~IC~~ is responsible ~~to initiate~~ for initiating any protective actions based on their best judgement of* the incident.

For ~~onsite~~ transportation events on the Hanford Site that are outside of established facility boundaries, it is the responsibility of the ~~on-call EDO~~ Incident Command Organization staff to contact the respective site contractor environmental single point-of-contact for the contractor that initiated the shipment. Transportation incidents do not include events involving passenger vehicles, whether government or privately owned. Based on the event information received from the Incident Command Organization staff and application of the three criteria above, the respective site contractor environmental single point-of-contact shall, ~~in consultation with the FH/ site contractor environmental single point-of-contact, to make the determination whether the incident is a RCRA emergency~~ make the determination whether the requirements of WAC-173-303-360(2)(d) are met. ~~A RCRA emergency for onsite transportation events is defined as a release of WAC hazardous substances that threatens human health or the environment. When this determination occurs~~ If reporting requirements are met, notifications delineated in subsection 5.1.2.1 shall be performed. Operational Emergency notifications described in subsection 5.1.1 may also be required ~~for a RCRA emergency~~ and are determined on a case-by-case basis by the ~~EDO~~ Incident Command Organization staff.

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
G.B. Griffin	Date 1/4/2001	J. L. Spracklen, Jr.	Date 1/16/01	S. Moore	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Emergency Management Plan	**List of Attachments, Attachment 4**

Description of Modification:

Section 5.0, Subsection 5.1.1:

5.1.1 Operational Emergency Notifications

Prompt and accurate emergency notifications are essential to mitigating consequences and for protecting the health and safety of workers and the public. For Operational Emergencies, procedures shall be established and maintained to provide prompt initial notification to workers and emergency response personnel and organizations, including appropriate offsite agencies, under the most limiting set of conditions.

For Operational Emergencies that also meet RCRA ~~emergency~~ contingency plan implementation criteria in accordance with subsection 4.2, personnel shall ~~categorize the event in accordance with subsection 4.2 and~~ perform notifications in accordance with subsection 5.1.2.

	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
G. B. Griffin	Date 1/4/2001	J. L. Spracklen, Jr.	Date 01/11/01	S. Moore	Date	L.E. Ruud	Date

[1]Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Hanford Emergency Management Plan	**List of Attachments, Attachment 4**

Description of Modification:

Section 5.0, Subsection 5.1.2:

5.1.2 Environmental Notifications

There are numerous environmental notifications that must be made including those ~~required under~~ that meet the RCRA ~~emergency category~~ contingency plan implementation requirements. These notifications are made either verbally or in writing, dependent on the event type. In many cases, notification requirements are based upon the quantity and location of a spill or release.

Site contractors shall maintain procedures to ensure implementation of environmental notifications in accordance with Federal, state or local requirements and agreements. Since events relating to spills or releases usually do not meet criteria for a DOE Order classifiable emergency (i.e., Alert, Site Area Emergency, or General Emergency), contractors must ensure that environmental notification procedures are consistent with the environmental notification process depicted in Figure 5-3.

Please check one of the Classes:	Class 1	Class [1]1	Class 2	Class 3
	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:

A. General Permit Provisions

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Hanford Facility RCRA Permit Modification

List of Attachments
Attachment 4, Hanford Emergency Management Plan

Replacement Sections

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Section 3.0

Section 4.0

Section 5.0

3.0 OFFSITE RESPONSE INTERFACES

3.1 OVERVIEW

Interfaces and coordination with offsite agencies are important in the planning, preparedness, response, and recovery elements of the Hanford emergency management program. As such, RL shall interface with Federal, tribal, state, local, and private organizations and/or agencies:

- that have a responsibility to protect the public and environment within the EPZs of the Hanford Site;
- with which RL supports as the Regional Coordinating Office for Region 8 (Oregon, Washington, and Alaska); and
- with which RL has entered into special agreements for assistance.

Where appropriate, RL shall develop and maintain agreements to formalize areas of understanding, cooperation, and support with offsite agencies.

3.1.1 Planning and Preparedness

The modes of interface for planning and preparedness activities, as is determined beneficial by the parties, may include:

- coordination of emergency plans and procedures;
- periodic meetings to share information and coordinate activities;
- training opportunities related to offsite responsibilities;
- development of agreements for support to and from offsite agencies;
- participation in annual exercises; and
- development of public information programs.

3.1.2 Response and Recovery

In the event of an emergency on or affecting the Hanford Site, RL shall interface with offsite agencies to ensure coordination and support of response and recovery activities. These interfaces include:

- notification and periodic updates to local jurisdictions within the plume EPZ, states that contain portions of the ingestion EPZ, and other agencies that may be requested to provide assistance (see respective subsections in section 5.0);

- communication and coordination with DOE-HQ;
- RL representation in appropriate offsite emergency centers;
- offsite representation in the DOE Hanford EOC;
- PARs to offsite agencies; and
- event scene interface with offsite responders.

Communications with state and local EOCs are depicted on Figure 3-1.

3.2 FEDERAL AGENCIES

3.2.1 U.S. Department of Energy-Headquarters

The DOE-HQ Cognizant Secretarial Officers are responsible for ensuring implementation of policy and requirements for activities conducted under their respective areas of cognizance.

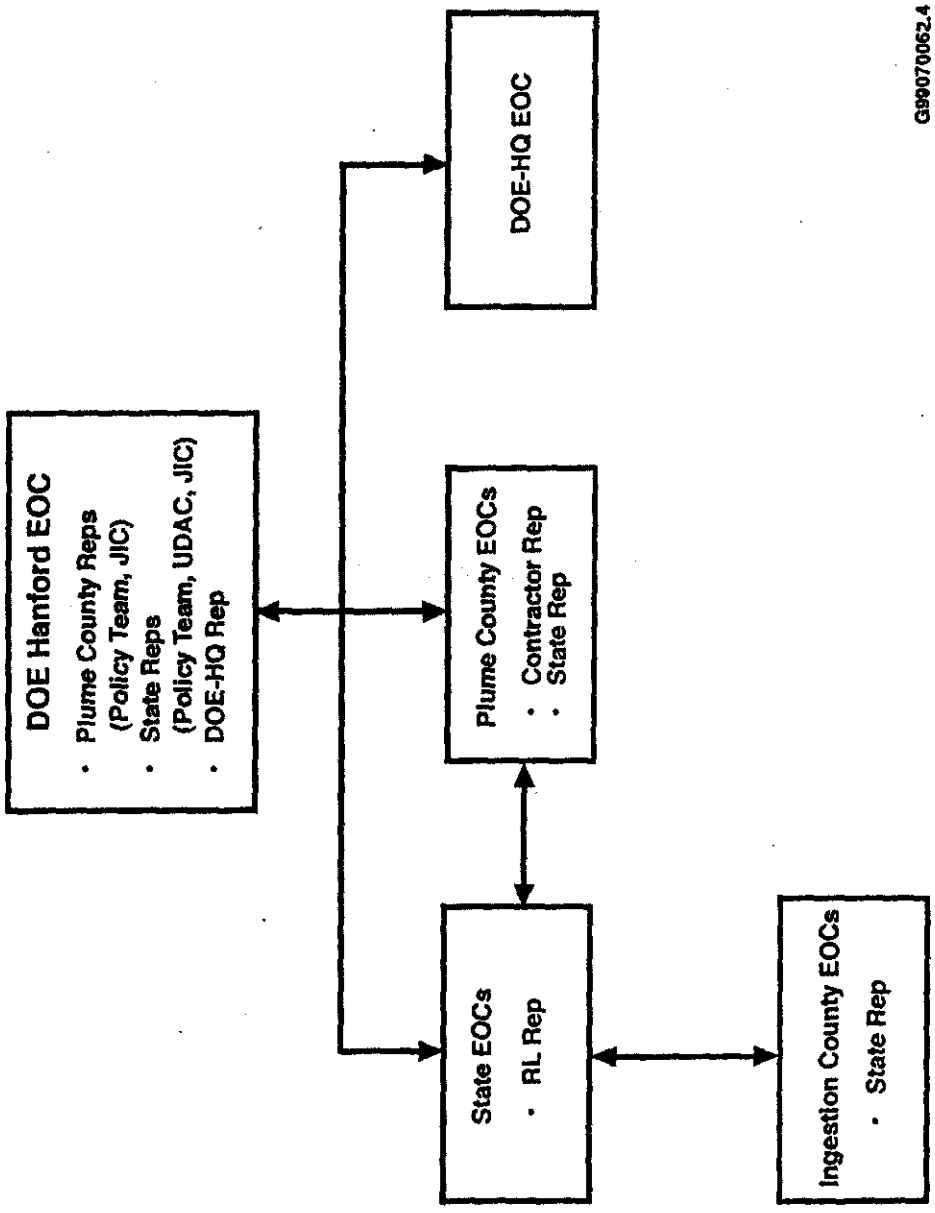
The DOE-HQ EOC serves as the point-of-contact for receipt of all emergency notifications and reports. Accordingly, the DOE-HQ EOC receives, coordinates, and disseminates emergency information to DOE-HQ elements and Program Office emergency points-of-contact, the White House Situation Room, and other Federal agencies. As such, emergency status reports shall be forwarded to the DOE-HQ EOC on a continuing basis until the emergency is terminated.

In the event of an emergency, a DOE-HQ Emergency Management Team is convened to:

- receive information on the facility, site, or area response;
- monitor the Operations/Field Office;
- provide appropriate support and assistance;
- assist with issue resolution; and
- coordinate interagency Congressional, and public information activities at the national level.

RL/ORP shall notify and provide information to the DOE-HQ EOC. Written reports shall be provided to the DOE-HQ EOC as soon as practical, but within 24 hours of emergency classification. A DOE-HQ Site Representative will respond to the DOE Hanford EOC to provide liaison with the DOE-HQ EOC. Upon request from DOE-HQ, RL/ORP shall dispatch a liaison to support activation of the DOE-HQ EOC.

Figure 3-1. Lines of Communication Between Emergency Centers.



3.2.2 Federal Bureau of Investigation

The role of the FBI is to serve as the primary U.S. Law Enforcement Agency responsible for investigating alleged or suspected violations of the Atomic Energy Act of 1954, as amended, and other Federal statutes. As such, security events of national consequence occurring at the Hanford Site and within the jurisdiction of the U.S. Department of Justice (e.g., theft of special nuclear material, terrorist activity, weapons of mass destruction incidents) will be communicated to the FBI.

During these types of security events, the FBI becomes the Lead Federal Agency and acts as the On-scene Commander with responsibility for crisis management which may include intelligence, surveillance, tactical operations, behavioral assessments, negotiations, forensics, and investigation. The FBI will receive a complete briefing on the incident from DOE Hanford EOC personnel and determine the need for additional regional and national FBI crisis management resources.

Command of FBI response activities, including plant security forces deployed at the event scene, will be the responsibility of the FBI Special-Agent-in-Charge when a declared security event has occurred. The FBI has the authority to assume command and control of all FBI and DOE on-scene crisis management resources, including plant security forces deployed at the event scene, when the FBI crisis management assets are in place and ready to assume their specific crisis management responsibilities. An RL Office of Security and Emergency Services (SES) representative will be assigned to provide direct support to the FBI as requested. RL will retain command and control of a security event until the FBI assumes this responsibility. Additionally, RL/ORP and site contractors will maintain operational control and authority over those site areas and resources not directly affected by the incident.

The DOE-HQ Office of Security and Emergency Operations maintains a memorandum of understanding (MOU) with the FBI Counterterrorism Division which provides mutual support guidelines concerning the contingency response planning, coordination of procedures, training and exercises, and operational cooperation required to effectively deal with actual or possible security related emergencies.

3.2.3 U.S. Coast Guard

The U.S. Coast Guard (USCG) (through the Thirteenth District Commander in Seattle, Washington and the Captain of the Port in Portland, Oregon) may regulate activities on navigable waters within the Hanford Site, when necessary, to prevent harm to persons, property, and the environment in or on those waters.

When notified of a Site Area or General Emergency, the USCG will close the appropriate portion of the Columbia River and make a broadcast to mariners.

In the event of an emergency, the ONC will make notifications and provide information to the USCG in Portland, Oregon.

3.2.4 U.S. Environmental Protection Agency

Under the provisions of the Federal Radiological Emergency Response Plan (FRERP), the EPA shall assume the lead Federal agency responsibility for coordinating the intermediate and long-term offsite radiation monitoring activities.

In the event of an emergency, the DOE Hanford EOC shall notify and provide information to the EPA Region 10 in Seattle, Washington.

3.2.5 Federal Aviation Administration

The Federal Aviation Administration (FAA) may make flight restrictions for aircraft under their jurisdiction over the Hanford Site.

The ONC will notify and provide information to the FAA Seattle Center. At a Site Area or General Emergency the ONC may request the FAA to impose flight restrictions over the Hanford Site.

3.2.6 Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is responsible for coordinating Federal assistance (other than monitoring resources) to the states if requested. Under the provisions of the FRERP, FEMA coordinates the offsite (nontechnical) response.

At the time of a declaration of an emergency, the DOE Hanford EOC notifies and provides information to the FEMA Region 10 office in Bothell, Washington.

3.3 STATE GOVERNMENT

States, along with local governments, share the responsibility for the protection of the public and the environment. The responsibilities and concept of operations for state agencies are described in the emergency response plans of each state.

RL shall work with the states of Washington and Oregon to assist in development of their program and response plans for an emergency at the Hanford Site. Periodic meetings will be conducted with the states to coordinate plans and share information. General descriptions of emergency responsibilities as well as areas of cooperation and understanding between RL and the states are delineated in memoranda of understanding (MOU). Copies of the MOUs are provided in Appendix B.

3.3.1 The State of Washington

The Governor of Washington is responsible for command and control of state resources to maintain and preserve life, property, and the environment in Washington. The lead agency for emergency planning and response activities is the Emergency Management Division of the Military Department. Other state agencies that participate in the planning process and have emergency response roles include the:

- Department of Health;
- Department of Agriculture;
- State Patrol;
- Department of Ecology; and
- Department of Transportation.

An emergency response plan is maintained by the Emergency Management Division that describes the concept of operations and roles and responsibilities of the state agencies. Emergency procedures are maintained by each state agency.

Responsibilities of the state of Washington include:

- providing a 24-hour single point of contact for the receipt of emergency notifications from RL/ORP;
- disseminating information to potentially affected counties within the plume and ingestion EPZs;
- coordinating ingestion protective action decisions and public information with the counties, the state of Oregon, and RL;
- providing assistance to counties as requested;
- evaluating offsite emergency PARs made to plume EPZ counties;
- making protective action decisions to protect public health from ingestion-related impacts, such as contamination of the food chain;
- performing field environmental radiological monitoring and dose assessments;
- providing guidance on emergency worker exposure and authorizing emergency workers to exceed protective action guides;
- implementing food, milk, and animal-feed control measures; and
- requesting Federal assistance as required.

3.3.2 The State of Oregon

The Governor of Oregon is responsible for directing and controlling state activities to protect the lives and property of Oregon citizens. The lead agency for Hanford Site emergency planning is the Oregon Office of Energy. Other state agencies that participate in the planning process and have emergency response roles include the:

- State Public Information Officer;
- Health Division;
- Emergency Management Division;
- Department of Agriculture;
- Oregon State University Radiation Center;
- Military Department;
- State Police; and
- State Highway Division.

An emergency response plan is maintained by the Oregon Office of Energy that describes the concept of operations and roles and responsibilities of state agencies. Emergency procedures are maintained by each state agency.

Responsibilities of the state of Oregon include:

- providing a 24-hour single point of contact for the receipt of emergency notifications from RL/ORP;
- making protective action decisions for the state of Oregon;
- coordinating protective action decisions and public information with counties, the state of Washington, and RL;
- coordinating state and local emergency response within the state of Oregon;
- performing field environmental radiological monitoring and dose assessments;
- providing guidance on emergency worker exposure and authorizing emergency workers to exceed protective action guides;
- providing assistance to Oregon counties within the ingestion EPZ;
- implementing food, milk, and animal-feed control measures; and
- requesting Federal assistance as required.

3.4 LOCAL ORGANIZATIONS

Cities and counties are responsible for protecting the lives and property of their residents. The responsibilities and concept of operations for local governments are described in the emergency response plans of each jurisdiction.

RL shall work with local emergency response organizations through the county and state emergency management organizations. Generally, RL shall interface directly with emergency response and planning organizations providing service to those areas within a plume EPZ of a Hanford Site facility. Interface with those jurisdictions within the ingestion EPZ generally shall be accomplished through the state emergency management organization. To accomplish the necessary close coordination with local agencies, periodic meetings shall be conducted to share information and discuss concerns.

3.4.1 Plume Emergency Planning Zone Counties

Portions of Benton, Franklin, and Grant Counties are within plume EPZs of a Hanford Site facility. The Boards of County Commissioners are responsible for making emergency protective action decisions and implementing emergency response actions, as necessary, to protect their residents outside the Hanford Site boundary. The lead agency for emergency planning and coordination of emergency response is the county emergency management agency. County emergency response plans and procedures are developed by the emergency management agencies, working with county, city, and volunteer emergency response agencies, such as:

- law enforcement;
- fire and emergency medical;
- public works/road departments;
- hospitals; and
- American Red Cross.

The emergency responsibilities of the plume EPZ counties include:

- making and implementing protective action decisions to protect citizens who live within the plume EPZ;
- implementing protective action decisions, made by the state of Washington, for ingestion-related impacts to residents within the ingestion EPZ;
- disseminating alert and warnings to the public and providing emergency public information; and
- coordinating response actions and public information with neighboring counties, the state of Washington, and RL.

RL maintains agreements with Benton, Franklin, and Grant Counties that outline the areas of responsibility and cooperation (see Appendix B).

3.4.1.1 Law Enforcement. RL SES interfaces with local law enforcement agencies for support to the Hanford Site during emergencies. Via a contractual agreement, the Benton County Sheriff's Office provides law enforcement on the Hanford Site (i.e., traffic enforcement and criminal investigation), and assists in access control; and, as such, coordinates activities with RL SES and the Hanford Patrol.

RL SES maintains memorandums of understanding with the law enforcement agencies of Kennewick, Richland, West Richland, Benton County, Franklin County, and the state of Washington.

3.4.1.2 Fire and Emergency Medical. The Hanford Fire Department is signatory to the Tri-County Mutual Aid Agreement for fire agencies. The agreement, signed by 11 local fire agencies, provides mutual aid for fire or medical emergencies.

The Hanford Fire Department meets regularly with local fire agencies. The Hanford Fire Department and HEHF Representatives meet routinely with emergency medical service agencies to coordinate and share information.

3.4.1.3 Hospitals. RL maintains agreements with local hospitals, which provide for the care of injured, contaminated (chemical or radiological) Hanford Site personnel. These hospitals include:

- Our Lady of Lourdes Health Care Center;
- Kennewick General Hospital; and
- Kadlec Medical Center.

RL shall provide for training and exercise support, as needed, related to the services provided to the Hanford Site. HEHF shall provide expertise on radiological decontamination or chemical exposure and treatment as requested.

3.4.2 Ingestion Emergency Planning Zone Counties

Counties within the ingestion EPZ of the Hanford Site are responsible to implement measures to protect their residents from potential ingestion related impacts. In the state of Washington, the counties of Adams, Benton, Franklin, Grant, Kittitas, Klickitat, Walla Walla, and Yakima are within the 50-mile (80-kilometer) ingestion EPZ. In the state of Oregon, the counties of Morrow and Umatilla are included. Ingestion EPZ counties have emergency response plans that describe their responsibilities in the event of an emergency at the Hanford Site.

RL shall coordinate emergency planning and preparedness for ingestion counties through the Washington State Emergency Management Division and the Oregon Office of Energy. Ingestion county responsibilities include:

- coordinating with the state and implementing decisions regarding protective measures for its residents within the ingestion EPZ; and
- consulting with the respective state EOC on the identification of access control points, food control areas, food control stations, and strategies for relocation, restoration, and recovery in contaminated areas.

3.5 TRIBAL ORGANIZATIONS

RL shall provide appropriate information to the impacted tribal organizations to coordinate planning for ingestion-related response actions of the tribe(s).

3.6 PRIVATE ORGANIZATIONS

The Hanford Site emergency management program shall address private facilities on or near the site. These facilities may be impacted by an emergency at the Hanford Site, or may impact Hanford Site facilities if they experience an emergency.

RL shall coordinate emergency planning and preparedness activities with onsite private facilities (namely Energy Northwest, US Ecology, and Richland Specialty Extrusions). In the event of an emergency at a Hanford Site facility, onsite private facilities will receive notifications and information from RL.

Where emergencies at facilities operated by private organizations may impact the Hanford Site, RL shall ensure that the emergency management program addresses actions that must be taken to protect site workers and facilities.

Areas of cooperation with private organizations shall be documented in memorandums of understanding.

3.7 MEMORANDA OF UNDERSTANDING

RL shall develop and implement mutual assistance agreements with offsite agencies to document areas of cooperation and assistance when appropriate and as identified in Federal, state, and local regulations (see Table 3-1).

RL SES is responsible for executing and maintaining MOUs related to security and emergency preparedness. The Hanford Fire Department shall execute and maintain MOUs within its area of responsibility. MOUs shall be reviewed annually and revised as needed.

Copies of MOUs shall be provided to the CSO through their inclusion in Appendix B of this plan.

Table 3-1. Memorandums of Understanding

PARTIES	SERVICES/AREAS OF COOPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
State of Washington	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Washington Emergency Management Division	None	01/03/01	Continue until canceled by either party upon 30 days written notice to the other.	RL SES
State of Oregon	Document areas of cooperation between the state of Oregon and RL in the planning for and providing notification and interface in the event of an incident on the Hanford Site.	Oregon Department of Energy	None	06/21/00	Continue until canceled by either party by written notice to the other Amendments or modifications to this Agreement my be made upon written agreement by both parities to the Amendment.	RL SES
Benton County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Benton County Emergency Management	None	03/16/00	Continue until canceled by either party by written notice to the other.	RL SES
Franklin County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Franklin County Emergency Management	None	01/20/00	Continue until canceled by either party by written notice to the other.	RL SES
Grant County	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Grant County Emergency Management	None	05/25/00	Continue until canceled by either party by written notice to the other.	RL SES
Energy Northwest	Document areas of cooperation between the parties in the planning for and response to emergencies at the Hanford Site.	Energy Northwest Emergency Preparedness	The specific areas of assistance will be provided based upon availability, and are limited to those emergency actions necessary to protect onsite personnel, the public health and safety, and the environment in the event of a major emergency at the Hanford Site or Energy Northwest.	09/07/00	Continue until canceled by either of the parties upon 30 days written notice to the other party.	RL SES
Energy Northwest and HEHF	Treatment of a significantly contaminated and injured person.	Energy Northwest Emergency Preparedness and HEHF	None	09/08/00	Continue until canceled by one or more of the parties upon 30 days written notice to the other(s).	RL SES

Table 3-1. Memorandums of Understanding

PARTIES	SERVICES/AREAS OF COOPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
Siemens Power Corporation (SPC)	Establishes means by which RL can provide consequence assessment and meteorological information to SPC during an emergency at the SPC plant in Richland, Washington	SPC	Emergencies affecting the Hanford Site or Hanford facilities takes precedence over all other uses of the UDAC facilities and/or staff.	01/19/00	Remain in effect for five years from effective date, at which time it shall be reviewed and renegotiated, reissued, or terminated. Either party may withdraw upon 30 days written notice.	RL SES
Siemens Power Corporation (SPC) and HEHF	Treatment of a significantly contaminated and slightly injured person.	SPC and HEHF	SPC agrees to undertake all costs and expenses incurred that directly result from this agreement.	01/03/00	Continue until canceled by one or more of the parties by written notice to the other(s).	RL SES
Allied Technology Group, Inc. (ATG) and HEHF	Treatment of a significantly contaminated and slightly injured person.	ATG and HEHF	ATG agrees to undertake all costs and expenses incurred that directly result from this agreement.	12/22/99	Continue until canceled by one or more of the parties by written notice to the other(s).	RL SES
National Weather Service	Sharing Meteorological Information.	NWS Western Regional Headquarters.	None	10/05/94	Agreement may be terminated by either party upon thirty days written notice to the other party.	RL SES
Our Lady of Lourdes Hospital (OLOL) Pasco, Washington	Significantly injured, contaminated persons will be admitted to facility for appropriate medical care.	OLOL Administrator	The responsibilities of OLOL will be limited to activities performed at the hospital.	08/17/98	Arrangements may be terminated by OLOL or by RL upon written notice to the other, which notice shall not become effective for at least 30 days after the date thereof.	RL SES
Kadlec Medical Center (KMC) Richland, Washington	Significantly injured, contaminated persons will be admitted to facility for appropriate medical care.	KMC Administrator	KMC will be limited to activities performed at the hospital and at the Emergency Decontamination Facility.	08/17/98	Arrangements may be terminated by KMC or by RL upon written notice to the other, which notice shall not become effective for at least 30 days after the date thereof.	RL SES
Kennewick General Hospital (KGH) Kennewick, Washington	Significantly injured, contaminated persons will be admitted to facility for appropriate medical care.	KGH Administrator	KGH will be limited to activities performed at the hospital.	08/17/98	Arrangements may be terminated by KGH or by RL upon written notice to the other, which notice shall not become effective for at least 30 days after the date thereof.	RL SES

Table 3-1. Memorandums of Understanding

PARTIES	SERVICES/AREAS OF COOPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
Tri-County Mutual Aid Agreement	Provide mutual aid to parties hereto desire to augment the fire and emergency medical protection available in their establishments, districts, agencies, and municipalities in the event of large fires or conflagrations or other disaster.	Hanford Fire Department	Assistance under the agreement is not mandatory.	02/05/98	Remain in full force and effect until canceled by mutual agreement of the parties hereto or by written notice by one party to the other party giving ten (10) days notice of said cancellation.	Hanford Fire Department
Richland Police Department	Mutual law enforcement assistance.	Richland Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/14/00	Indefinite duration.	RL SES
West Richland Police Department	Mutual law enforcement assistance.	West Richland Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/14/00	Indefinite duration.	RL SES
Kennewick Police Department	Mutual law enforcement assistance.	Kennewick Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/14/00	Indefinite duration.	RL SES
Benton County Sheriff	Mutual law enforcement assistance.	Benton County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/14/00	Indefinite duration.	RL SES
Franklin County Sheriff	Mutual law enforcement assistance.	Franklin County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/14/00	Indefinite duration.	RL SES
Washington State Patrol	Mutual law enforcement assistance.	Washington State Patrol	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	02/14/00	Indefinite duration.	RL SES

Table 3-1. Memorandums of Understanding

PARTIES	SERVICES/AREAS OF COOPERATION	POINTS OF CONTACT	CONSTRAINTS	DATE	EXPIRATION DATE	WHERE ON FILE
Adams County Sheriff	Mutual law enforcement assistance.	Adams County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/27/00	Indefinite duration.	RL SES
Grant County Sheriff	Mutual law enforcement assistance.	Grant County Sheriff	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	03/14/00	Indefinite duration.	RL SES
Pasco Police Department	Mutual law enforcement assistance.	Pasco Police Department	Assistance will be provided subject to the provision of the agreement and any other conditions as the parties may agree.	04/03/00	Indefinite duration.	RL SES

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4.0 EVENT CATEGORIZATION, CLASSIFICATION, AND OTHER DETERMINATIONS

Categorization and classification of events are key to ensuring that appropriate notifications and response actions are promptly initiated. Event categorization and classification criteria are developed and maintained to include events that require similar actions. The spectrum of actions triggered by categorization range from management activities that are not required to be initialized until after an event is closed out (i.e., occurrence reporting), to full activation of onsite and offsite emergency response organizations.

At the Hanford Site, three event categories are used to meet the requirements of DOE Orders. The three event categories are: Operational Emergency, Unusual Occurrence, and Off-Normal Occurrence. Depending on the severity, an Operational Emergency may further be classified as an Alert, Site Area Emergency, or General Emergency.

In addition to categorization and classification, state and Federal regulations and mutual agreements between RL and state and county agencies require that events be assessed to determine if they meet RCRA contingency plan implementation criteria in order to comply with WAC-173-303-360(2)(d) requirements, or if they may generate public concern or media interest, which are termed as an Abnormal Event.

Since events may meet one or more event criteria, a sequential evaluation process prioritized according to the time urgency of the required actions is employed. This section describes the provisions that shall be established and maintained as methods to be used to recognize, categorize, and classify events in order to protect workers, the public, and the environment. The Unusual and Off-normal Occurrence categories are used solely for occurrence reporting purposes, which is delineated in DOE O 232.1A, *Occurrence Reporting and Processing of Operations Information.* Occurrence reporting is not addressed in this plan.

4.1 OPERATIONAL EMERGENCY

Operational Emergencies are unplanned, significant events or conditions that require time-urgent response from outside the immediate/affected facility or area of the incident. Operational Emergencies are divided into Base Program Operational Emergencies or Hazardous Material Operational Emergencies. Such emergencies are caused by, involve, or affect DOE facilities or activities and represent, cause, or have the potential to cause the events or conditions described in the respective subsections below. Incidents that can be controlled by employees or maintenance personnel in the immediate/affected facility or area are not Operational Emergencies. Incidents that do not pose a significant hazard to safety, health, and/or the environment and that do not require a time-urgent response are not Operational Emergencies. Initiating events that warrant categorization as Operational Emergencies shall be included in site- and facility-specific procedures.

Emergencies, once categorized, shall not be downgraded. An event determined to be an emergency will remain so until the emergency response is terminated.

RL/ORP shall determine the criteria to be used to categorize and classify Operational Emergencies based on site-specific criteria. Additional criteria may be based on the DOE *Emergency Management Guide* (DOE 1997). Site contractors shall maintain procedures to ensure recognition and appropriate categorization and classification of emergencies.

4.1.1 Base Program Operational Emergency

A Base Program Operational Emergency shall be declared when events occur that represent a significant degradation in the level of safety at a facility and that require time-urgent response efforts from outside the facility but do not involve the release or potential release of significant quantities of radiological or nonradiological materials. Since Base Program Operational Emergencies do not involve the release of significant quantities of hazardous materials, they do not require further classification (i.e., as Alert, Site Area Emergency, or General Emergency).

The designated point-of contact (e.g., BED/BW, contractor single point-of-contact), with assistance from ONC personnel will assess event information to determine if the event should be categorized as a Base Program Operational Emergency. The criteria for categorization of a Base Program Operational Emergency is part of the Abnormal Event criteria which is contained as a single criteria list within Hanford implementing directive HFID 232.1B, *Notification, Reporting, and Processing of Operations Information.*

Additionally, offsite transportation events involving RL/ORP-owned hazardous materials are categorized as Base Program Operational Emergencies and, as such, do not require classification.

4.1.2 Hazardous Material Operational Emergency

If an Operational Emergency represents a specific threat to workers and the public due to the release or potential release of significant quantities of radiological and nonradiological hazardous materials, it shall be classified as either an Alert, Site Area Emergency, or General Emergency, in order of increasing severity.

For facility events, the initial event classification shall be made by the BED or IC in accordance with established procedures.

For nonfacility events (e.g., transportation events, wildland fires), the initial event classification shall be made by the on-call Emergency Duty Officer.

The emergency classification shall be reviewed periodically to ensure the classification is commensurate with response activities; however, the classification shall not be downgraded until termination of the event. The criteria used to recognize and classify emergencies, called emergency action levels (EALs), are delineated in subsection 4.4. Hazardous Material Operational Emergency notification requirements are delineated in subsection 5.1.1.2.

4.1.2.1 Alert. An Alert shall be declared when events are predicted, are in progress, or have occurred that result in either of the following.

(1) An actual or potential substantial degradation in the level of control over hazardous materials (radiological and nonradiological). The radiation dose from any release to the environment of radioactive material or a concentration in air of other hazardous material is expected to be limited to a fraction of the applicable Protective Action Guide (PAG) or Emergency Response Planning Guideline (ERPG) at the facility boundary; but it is not expected that the applicable PAG or ERPG will be exceeded at or beyond the facility boundary. (See Table 4-2 for specific PAG and ERPG exposure levels.)

(2) An actual or potential substantial degradation in the level of safety or security of a facility or activity that could, with further degradation, produce a Site Area Emergency or General Emergency.

Additionally, an Alert represents an event where the entire Hanford Site ERO is required to provide more than event monitoring or minimal assistance to the facility organization.

At an Alert, the Hanford Site ERO shall:

- activate the DOE Hanford EOC and establish communications, consultation, and liaison with offsite agencies;
- continuously assess pertinent information for DOE decision makers, offsite agencies, the public, and other appropriate entities;
- conduct appropriate assessments, investigations, or preliminary sampling and monitoring;
- mitigate the severity of the occurrence or its consequences; and
- prepare for other response actions should the situation become more serious, requiring emergency response organizations to mobilize or activate resources.

4.1.2.2 Site Area Emergency. A Site Area Emergency shall be declared when events are predicted, in progress, or have occurred that result in either of the following situations.

(1) An actual or potential major failure of functions necessary for the protection of workers or the public. The radiation dose from any release of radioactive material or concentration in air from any release of other hazardous material is expected to be equal to or exceed the applicable PAG or ERPG exposure levels at the facility boundary but is not expected to be exceeded at or beyond the Hanford Site boundary. (See Table 4-2 for specific PAG and ERPG exposure levels. Refer to site boundary definition in subsection 1.4.2.)

(2) Actual or potential major degradation in the level of safety or security of a facility or process that could, with further degradation, produce a General Emergency.

At a Site Area Emergency, the Hanford Site ERO shall perform the same response actions as for an Alert plus the:

- initiation of predetermined protective actions for onsite personnel;
- provision of information to the public and the media;
- implementation of or assistance in any evacuations and sheltering; and
- mobilization of appropriate emergency response groups or protective/security forces for immediate dispatch should the situation become more serious.

4.1.2.3 General Emergency. A General Emergency shall be declared when events are predicted, in progress, or have occurred that result in the actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of hazardous materials (radiological or nonradiological) to the environment. The radiation dose from any release of radioactive material or a concentration in air from any release of other hazardous material is expected to be equal to or exceed the applicable PAG or ERPG exposure levels at or beyond the Hanford Site boundary. (See Table 4-2 for specific PAG and ERPG exposure levels. Refer to site boundary definition in subsection 1.4.2.)

At a General Emergency, the Hanford Site ERO shall perform the same response actions as for a Site Area Emergency plus the notification, mobilization, and dispatch of appropriate emergency response personnel and equipment, including appropriate DOE emergency response assets, and liaison with offsite agencies for the recommendation of predetermined public protective actions.

Operational Emergency notification requirements are delineated in respective subsections of section 5.0.

4.2 IMPLEMENTATION OF THE RESOURCE CONSERVATION AND RECOVERY ACT CONTINGENCY PLAN

Documentation to meet RCRA contingency plan requirements must be prepared by certain facilities conducting activities regulated under WAC-173-303 (Washington Dangerous Waste Regulations) in accordance with subsection 1.1. These requirements are incorporated into the Hanford Site's overall emergency planning documentation. Therefore, there is not a specific document titled "contingency plan."

For a facility event, the BED/BW shall determine whether the requirements of WAC-173-303-360(2)(d) were met based upon an evaluation and assessment in consultation with their respective site contractor environmental single point-of-contact.

The BED/BW ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED/BW shall use the following guidelines to determine if an event has met the requirements of WAC-173-303-360(2)(d):

(1) The event involved an unplanned spill, release, fire, or explosion;

AND

(2a) The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable), or

(2b) The unplanned fire or explosion occurred at a facility or transportation activity subject to RCRA contingency plan requirements;

AND

(3) Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED/BW shall determine, in consultation with the respective site contractor environmental single point-of-contact, if notification to Ecology is needed to meet WAC-173-303-360(2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. The notification process is delineated in subsection 5.1.2.1. Operational Emergency notifications described in subsection 5.1.1 may also be required as determined on a case-by-case basis by the BED/BW.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED/BW is responsible for initiating any protective actions based on their best judgement of the incident.

For transportation events on the Hanford Site that are outside of established facility boundaries, it is the responsibility of the Incident Command Organization staff to contact the respective site contractor environmental single point-of-contact for the contractor that initiated the shipment. Transportation incidents do not include events involving passenger vehicles, whether government or privately owned. Based on the event information received from the Incident Command Organization staff and application of the three criteria above, the respective site contractor environmental single point-of-contact shall make the determination whether the requirements of WAC-173-303-360(2)(d) are met. If reporting requirements are met, notifications delineated in subsection 5.1.2.1 shall be performed. Operational Emergency notifications described in subsection 5.1.1 may also be required and are determined on a case-by-case basis by the Incident Command Organization staff.

4.3 ABNORMAL EVENT

There are a variety of events or situations that may occur on the Hanford Site that, while not creating or indicating an emergency condition, may generate public concern or media interest. Local, state, and tribal agencies need timely information regarding these events in order to reassure the public that these situations do not threaten their health or safety.

RL will work with offsite agencies to maintain criteria that will be used to identify these situations, termed Abnormal Event. The criteria will include those events as mutually agreed to by RL/ORP and the offsite agencies. Additionally, any incident categorized as an Operational Emergency, but not further classified as an Alert, Site Area Emergency, or General Emergency, will automatically trigger notifications to offsite agencies as an Abnormal Event. RL/ORP will further communicate criteria changes to the site contractors upon acceptance by RL/ORP and the offsite agencies.

4.4 EMERGENCY ACTION LEVELS

The EALs are specific, predetermined, observable criteria used to detect, recognize, and determine the classification of Hazardous Material Operational Emergencies identified by the hazards assessment. The EALs are typically identified as either event-based or symptom-based. The distinction arises from the available methods of detecting and recognizing the initiating conditions of the event. The development of symptom-based EALs is the preferred approach recognizing that there will usually be some initiating conditions that require an event-based approach. Initiating conditions must be identified specifically in EAL procedures and must be observable and recognizable in a timely manner by responsible personnel.

Facility-specific and nonfacility (e.g., onsite transportation incident, wildland fire, etc.) EALs shall be developed for the spectrum of potential Hazardous Material Operational Emergencies identified by the hazards assessment. Additional guidance for developing EALs can be found in the DOE *Emergency Management Guide* (DOE 1997) regarding hazards assessment and event classification.

The definitions delineated in Table 4-1, used in conjunction with Table 4-2, depict the criteria used at the Hanford Site to classify Hazardous Material Operational Emergency events. The BED/IC or EDO (for nonfacility events) is responsible for making initial classification of emergency events in accordance with RL/ORP and site contractor procedures.

Event classification using EALs also forms the basis for notification and participation of offsite organizations and for determining what and when protective actions will be implemented. As such, EALs and related information must be consistent and integrated with the emergency plans and procedures of offsite Federal, tribal, state, and local organizations and should be reviewed annually, as appropriate by all parties involved in response activities.

4.4.1 Symptom-Based Emergency Action Levels

Symptom-based EALs are dependent on one or more observable conditions or parameter values (i.e., symptoms) that are measurable over some continuous spectrum. The EALs should be the same indicators as those used to monitor routine facility operation. The level of severity indicated by these symptoms is directly related to the failure of or challenge to the facility's hazardous materials confinement barriers, other symptoms or events that occur simultaneously, and the ability of personnel to gain control and bring the indicator(s) back to safe levels. The resulting facility-specific EALs shall consist of specific quantified values (e.g., alarms and control instrument readings) that require no additional interpretation by the user. By comparing the observed value to the EALs in event classification procedures, the correct Hazardous Material Operational Emergency class can be readily determined.

4.4.2 Event-Based Emergency Action Levels

Event-based EALs address the occurrence of discrete events with potential safety significance. The level of severity is determined by the degree to which hazardous material confinement barriers are either failed or challenged as a result of the event, and the ability of personnel to gain control of the situation. Event classification requires the interpretation of one or more qualitative conditions or discrete observable indicators to determine if the existing situation matches the descriptions contained in the event classification procedure.

4.4.3 Emergency Action Level Development

The methodology for development of Hanford Site EALs is described in the following steps.

Step 1: Using the hazards assessment as the technical basis, identify the accident scenarios and consequences.

Step 2: Identify initiating conditions, barrier failures, system failures, contributing events and accident mechanisms for the scenario.

Step 3: Use the information developed in step 2 to identify specific equipment or other methods of detection.

Step 4: For detection and recognition methods that correlate directly to consequences, specific values for each emergency class are developed as necessary. These are symptom-based EALs.

Step 5: If there are no readily available methods to confirm a release, but the situation has the potential to exceed emergency criteria, the recognition of the event becomes the EAL. These are event-based EALs.

4.4.4 Use of Emergency Action Levels

On determination that an event has occurred at or affecting a Hanford Site facility, the BED/IC or EDO (for nonfacility events) shall promptly assess the conditions, compare the indications to the EAL set, and determine the appropriate Hazardous Material Operational Emergency classification. Then, immediate protective and mitigative actions, activation of the emergency response organization, and appropriate notifications are carried out.

The DOE Hanford EOC is responsible for ensuring that the emergency has been classified appropriately by the BED/IC or EDO (for nonfacility events) by reviewing the appropriate EAL to determine that the correct emergency classification has been selected.

Table 4-1. Summary of Hazardous Material Operational Emergency Classifications.

OPERATIONAL EMERGENCY CLASSIFICATION	FACILITY OR PROCESS EVENT	ONSITE TRANSPORTATION EVENT
Alert	Actual or potential substantial degradation of level of control over radiological or nonradiological hazardous material. Releases are not expected to exceed applicable PAG or ERPG levels at or beyond the facility boundary. OR Actual or potential substantial degradation in the level of safety or security that could, with further degradation, produce a Site Area Emergency or General Emergency.	Actual or potential substantial degradation of the safety of the shipment. Exposures in excess of PAG or ERPG levels only expected for personnel engaged in cleanup, recovery and investigation.
Site Area Emergency	Actual or potential major failures of functions necessary for the protection of workers or the public. Releases could exceed applicable PAG or ERPG levels onsite but not offsite. OR Actual or potential major degradation in the level of safety or security that could, with further degradation, produce a General Emergency.	Actual or potential major reduction in safety of a shipment. Release may exceed PAG or ERPG levels beyond the exclusion zone[1] onsite but not at nearest site boundary.
General Emergency	Actual or imminent catastrophic reduction of facility safety or security systems with potential for the release of large quantities of radiological or nonradiological materials to the environment. Releases reasonably expected to exceed applicable PAG or ERPG levels offsite.	Actual or imminent catastrophic reduction in safety of a shipment. Release expected to exceed PAG or ERPG levels offsite.

[1] *The exclusion zone is defined as the immediate vicinity of the accident.*

Table 4-2. Hanford Site Hazardous Material Operational Emergency Classification Criteria.

ALERT	SITE AREA EMERGENCY	GENERAL EMERGENCY
≥ ERPG[1]-1 & < ERPG-2 at the facility boundary[2].	≥ ERPG-2 at the facility boundary.	≥ ERPG-2 at the Hanford Site boundary.
≥ 100 mrem TEDE[3] at the facility boundary.	≥ 1 rem TEDE at the facility boundary.	≥ 1 rem TEDE at the Hanford Site boundary.

[1] Appropriate ERPG values or equivalent as stated in the DOE *Emergency Management Guide. Solubility class "D" uranium compounds are limited by chemical toxicity.*

[2] The facility boundary is defined as the property protection area perimeter fence when present or a distance of 100 meters from the release location unless otherwise specified in the hazards assessment documentation.

[3] The total effective dose equivalent (TEDE) includes the summation of the doses delivered from plume submersion, ground shine, and inhalation from accidental releases.

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5.0 NOTIFICATIONS AND COMMUNICATIONS

5.1 NOTIFICATIONS

Notifications are made for events on the Hanford Site according to the event category (i.e., Operational Emergency, Unusual Occurrence, and Off-normal Occurrence); for environmental events, including those that meet the RCRA contingency plan implementation criteria; and for events that may generate public concern or media interest, termed Abnormal Events. Notifications shall be made in order of urgency with Operational Emergency (Hazardous Material Operational Emergency only) notifications performed first; Environmental notifications (including those that meet RCRA contingency plan implementation requirements) performed second; and Abnormal Event (including Base Program Operational Emergency), Unusual Occurrence, and Off-Normal Occurrence notifications performed last.

Contractors shall maintain procedures to ensure that notification and reporting requirements are made in accordance with DOE O 151.1 and DOE O 232.1A; applicable Federal, state, or local requirements; and special agreements with offsite agencies or tribal governments.

The Unusual and Off-normal Occurrence categories are used solely for reporting versus immediate action purposes. Notifications and written reports of incidents meeting occurrence reporting criteria are made to DOE-HQ and also to offsite entities as requested. RL shall maintain a listing of offsite agencies that are to receive the occurrence reports. Additional information regarding Unusual and Off-normal Occurrences is delineated in DOE O 232.1A, *Occurrence Reporting and Processing of Operations Information.* Occurrence Reporting is not addressed in this plan. Offsite transportation events involving RL/ORP-owned hazardous materials shall be reported in accordance with DOE O 151.1 and 49 CFR 171.15.

RL/ORP shall monitor the notification process to ensure notifications of applicable emergency events as necessary or appropriate.

5.1.1 Operational Emergency Notifications

Prompt and accurate emergency notifications are essential to mitigating consequences and for protecting the health and safety of workers and the public. For Operational Emergencies, procedures shall be established and maintained to provide prompt initial notification to workers and emergency response personnel and organizations, including appropriate offsite agencies, under the most limiting set of conditions.

For Operational Emergencies that also meet RCRA contingency plan implementation criteria in accordance with subsection 4.2, personnel shall perform notifications in accordance with subsection 5.1.2.

5.1.1.1 Base Program Operational Emergency Notifications. Site contractors shall ensure that their designated points-of-contact (e.g., BED/BW, contractor single point-of-contact) report events that meet notification criteria delineated in Appendix A of HFID 232.1B, *Notification, Reporting, and Processing of Operations Information*, to the ONC. These notifications shall be made as soon as possible (within 30 minutes). The designated point-of-contact, with assistance from ONC personnel, will assess the event information to determine if the event should be categorized as a Base Program Operational Emergency. If the event meets the Base Program Operational Emergency criteria, the ONC shall notify the DOE-HQ EOC within 30 minutes following categorization and the offsite agencies immediately following as part of the Abnormal Event notification delineated in subsection 5.1.3.

The same notification requirements apply to offsite transportation events involving RL/ORP-owned hazardous materials. The EDO shall provide categorization information to the ONC so that the notifications can be initiated.

5.1.1.2 Hazardous Material Operational Emergency Notifications. Hazardous Material Operational Emergency notifications shall be made quickly and accurately to:

- augment the site and facility operating staff with personnel in designated response roles to respond to the emergency;
- activate emergency centers;
- facilitate public notification by offsite authorities and agencies that have decision-making authority for directing protective actions (e.g., evacuation of local areas); and
- protect site and facility personnel and emergency workers through the provision of information necessary to implement accountability and protective actions such as sheltering, decontamination, and evacuation.

The Hazardous Material Operational Emergency notification process is outlined in Figure 5-1.

5.1.1.2.1 Initial Onsite and Offsite Notifications. The initial event classification (Alert, Site Area Emergency, or General Emergency per criteria delineated in subsections 4.1.2.1, 4.1.2.2, and 4.1.2.3 respectively) shall be made by the BED/IC or EDO (for nonfacility events) in accordance with established procedures.

The BED/IC or EDO (for nonfacility events) shall initiate immediate notifications via the 911 emergency number to request emergency response assistance and to notify onsite personnel within their geographic area of responsibility via sirens, the onsite crash alarm telephone system, or plant telephone so that they can take appropriate protective actions.

The BED/IC or EDO (for nonfacility events) is responsible for making notifications for the purpose of onsite protective actions. The protective actions include, as applicable, actuating appropriate facility sirens, notifying the POC to actuate additional sirens, and/or initiating crash alarm telephone system notifications.

Additionally, the BED/IC or EDO (for nonfacility events) is responsible for ensuring that a completed copy of the Hanford Emergency Notification Form (Figure 5-2) is transmitted to the ONC in accordance with established procedures. If a facsimile machine is not available, the BED/IC or EDO (for nonfacility events) is responsible for ensuring that pertinent information from the Hanford Emergency Notification Form is provided to the ONC.

Upon notification from the BED/IC or EDO (for nonfacility events) regarding the declaration of a emergency event classified as Alert, Site Area Emergency, or General Emergency, the ONC shall make offsite notifications within 15 minutes to:

- DOE-HQ EOC;
- Benton County, Franklin County, Grant County, Washington State, and Energy Northwest via the DOE Crash Alarm Telephone System (hot line); and
- Oregon State.

The ONC shall also initiate the automated Emergency Notification System (ENS) and pager system to activate the DOE Hanford EOC and make onsite notifications, as appropriate, to the:

- DOE Hanford management on-call;
- Emergency Duty Officer (FHI);
- PNNL single point-of-contact;
- CHG single point-of-contact;
- BHI single point-of-contact; and
- HEHF single point-of-contact.

Within 30 minutes of the event declaration, the ONC Duty Officer shall notify, as applicable to the event, other offsite agencies that may have personnel working in remote locations of the Hanford Site (e.g., personnel at locations without alarm or siren capabilities). All other notifications shall be made as soon as practical. The ONC shall maintain a list of agencies to be notified.

5.1.1.2.2 Reclassification Notifications. Reclassification of rapidly escalating emergencies shall be made by the BED/IC or EDO (for nonfacility events) until the DOE Hanford EOC is declared operational. The BED/IC or EDO (for nonfacility events) shall provide immediate appropriate protective action notification to onsite personnel within their respective geographic area of responsibility and also provide notification to the POC and ONC via the 911 emergency number regarding the reclassification. The ONC then shall notify the offsite emergency response organizations of the event reclassification.

Upon declaration of their operability, the DOE Hanford EOC shall have the responsibility for reclassifying or terminating emergencies, disseminating additional protective action decisions to onsite personnel, and performing offsite notifications that include protective action recommendations.

The same offsite notification requirements listed above apply anytime an event is reclassified.

5.1.1.2.3 U.S. Department of Energy Emergency Response Assets. It is the responsibility of the DOE Hanford EOC to forward any requests for national DOE emergency response assets to the Regional Response Coordinator. Response to events requiring DOE emergency assistance shall be directed to appropriate DOE-HQ elements. DOE responsibilities for emergency assistance are delineated within interagency Federal response and recovery plans, Executive Orders, and/or international agreements. Specific notifications for response to a request for radiological assistance are described in DOE/RL-92-49, *U.S. Department of Energy Radiological Assistance Program Response Plan Region 8.*

5.1.1.2.4 Reports. Following termination of emergency response, and in conjunction with the Final Occurrence Report per DOE O 232.1A, the facility shall submit a final report on the emergency to the Occurrence Reporting and Processing System. The RL/ORP Manager shall designate a lead evaluator to conduct an evaluation and submit a final report on the emergency response. Upon approval by the RL/ORP Manager, the final report shall be submitted to the Associate Deputy Secretary for Field Management and the Director of Emergency Management.

All reports and releases shall be reviewed for classified or Unclassified Controlled Nuclear Information prior to being provided to noncleared personnel, entered into unclassified data bases, or transmitted using nonsecure communications equipment.

5.1.2 Environmental Notifications

There are numerous environmental notifications that must be made including those that meet the RCRA contingency plan implementation requirements. These notifications are made either verbally or in writing, dependent on the event type. In many cases, notification requirements are based upon the quantity and location of a spill or release.

Site contractors shall maintain procedures to ensure implementation of environmental notifications in accordance with Federal, state or local requirements and agreements. Since events relating to spills or releases usually do not meet criteria for a DOE Order classifiable emergency (i.e., Alert, Site Area Emergency, or General Emergency), contractors must ensure that environmental notification procedures are consistent with the environmental notification process depicted in Figure 5-3.

Figure 5-1. Hazardous Material Operational Emergency Notifications.

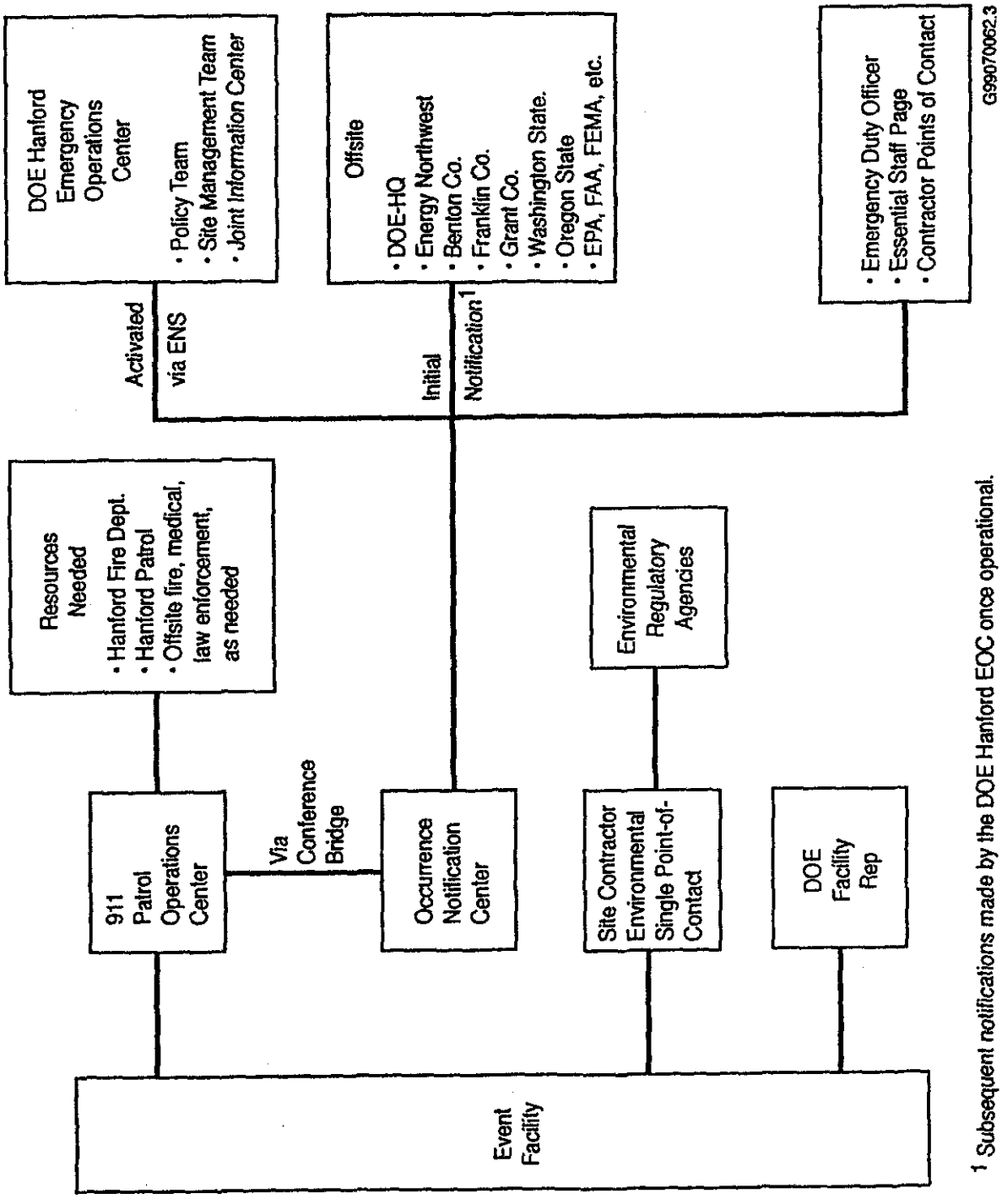


Figure 5-2. Hanford Emergency Notification Form.

RL-F-5540.1
(06/00)

U.S. DEPARTMENT OF ENERGY
HANFORD EMERGENCY NOTIFICATION FORM

No. _____

1 NOTIFICATION PROVIDED BY: Name: _____ Phone: (509) _____

2 AREA AND FACILITY: _____ 3 TYPE EVENT: a. ☐ Emergency b. ☐ Exercise/Drill

4 CLASSIFICATION/STATUS:

a. ☐ Initial Classification b. ☐ Reclassification c. ☐ Termination d. ☐ PAR Change/Addition e. ☐ Information

5 EMERGENCY CLASSIFICATION LEVEL AND PROTECTIVE ACTION RECOMMENDATIONS:

AREA	a. ☐ ALERT EMERGENCY	b. ☐ SITE AREA EMERGENCY	c. ☐ GENERAL EMERGENCY
☐ 100K	Evacuate Columbia River from White Bluffs to Vernita Bridge.	Evacuate Columbia River from White Bluffs to Vernita Bridge.	• Evacuate Columbia River from White Bluffs to Vernita Bridge. • Evacuate Section 5, east of Hwy. 24.
☐ 200	None	Evacuate Columbia River from *Vernita to Leslie Groves Park.*	• Evacuate Columbia River from Vernita *to Leslie Groves Park.* • Evacuate Sections 5, 6, and 7.
☐ *300*	None	Evacuate Columbia River from White Bluffs to Howard Amon Park.	• Evacuate Columbia River from White Bluffs to Howard Amon Park. • Evacuate 3 mile radius.
☐ 400	None	Evacuate Columbia River from White Bluffs to Leslie Groves Park.	Evacuate Columbia River from White Bluffs to Leslie Groves Park.
☐ Others	None	None	None

6 TYPE OF INCIDENT: *check all that apply*

a. ☐ Fire b. ☐ Explosion c. ☐ Radiological d. ☐ Security e. ☐ Hazardous Materials f. ☐ Electrical

g. ☐ Other

EAL No.: DOE-0223, RLEP 1.0, Appendix 1-_____ Table _____

Description of Incident: _____

7 RELEASE INFORMATION:

a. ☐ No Release
b. ☐ Airborne Release — Estimated Start Time of Release
c. ☐ Spill _____
d. ☐ Release to Columbia River
e. ☐ *Unknown* — Assumed Duration of Release
f. ☐ Release Terminated _____

8 METEOROLOGICAL DATA:

Wind Speed _____ mph

Wind Direction: from _____ toward _____

Precipitation: ☐ Yes ☐ No

Stability Class:

A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐

9 PROGNOSIS OF SITUATION:

a. ☐ Unknown b. ☐ Stable c. ☐ Escalating d. ☐ Improving

FOR EOC USE ONLY

10 ADDITIONAL OFFSITE PROTECTIVE ACTION RECOMMENDATIONS:

_____

_____

_____

11 BASIS FOR ADDITIONAL OFFSITE PROTECTIVE ACTION RECOMMENDATIONS:

a. ☐ Security c. ☐ Hazardous Materials Release
b. ☐ Facility Condition d. ☐ Other _____

APPROVED: DATE: TIME:

5.1.2.1 Initial/Verbal Notifications. For any incident which involves a spill, release, fire, explosion, or environmental permit exceedence, the respective site contractor environmental single point-of-contact shall be notified to determine applicability of requirements and perform appropriate environmental notifications. The respective site contractor environmental single point-of-contact shall notify the appropriate Federal, state and/or local agencies. Additionally, the ONC shall be notified in order to determine if an Abnormal Event notification is also required as delineated in subsection 5.1.3.

5.1.2.2 Written Reports. The respective site contractor shall develop any necessary written reports and submit to RL/ORP for review and concurrence. RL/ORP shall submit written reports to the appropriate Federal, state or local agencies within the required time frames.

5.1.2.3 Resumption of Operations. The respective site contractor environmental single point-of-contact shall notify the appropriate Federal, state and/or local agencies that the facility is in compliance with cleanup activities described in subsection 9.2.3 before operations are resumed.

5.1.3 Abnormal Event Notifications

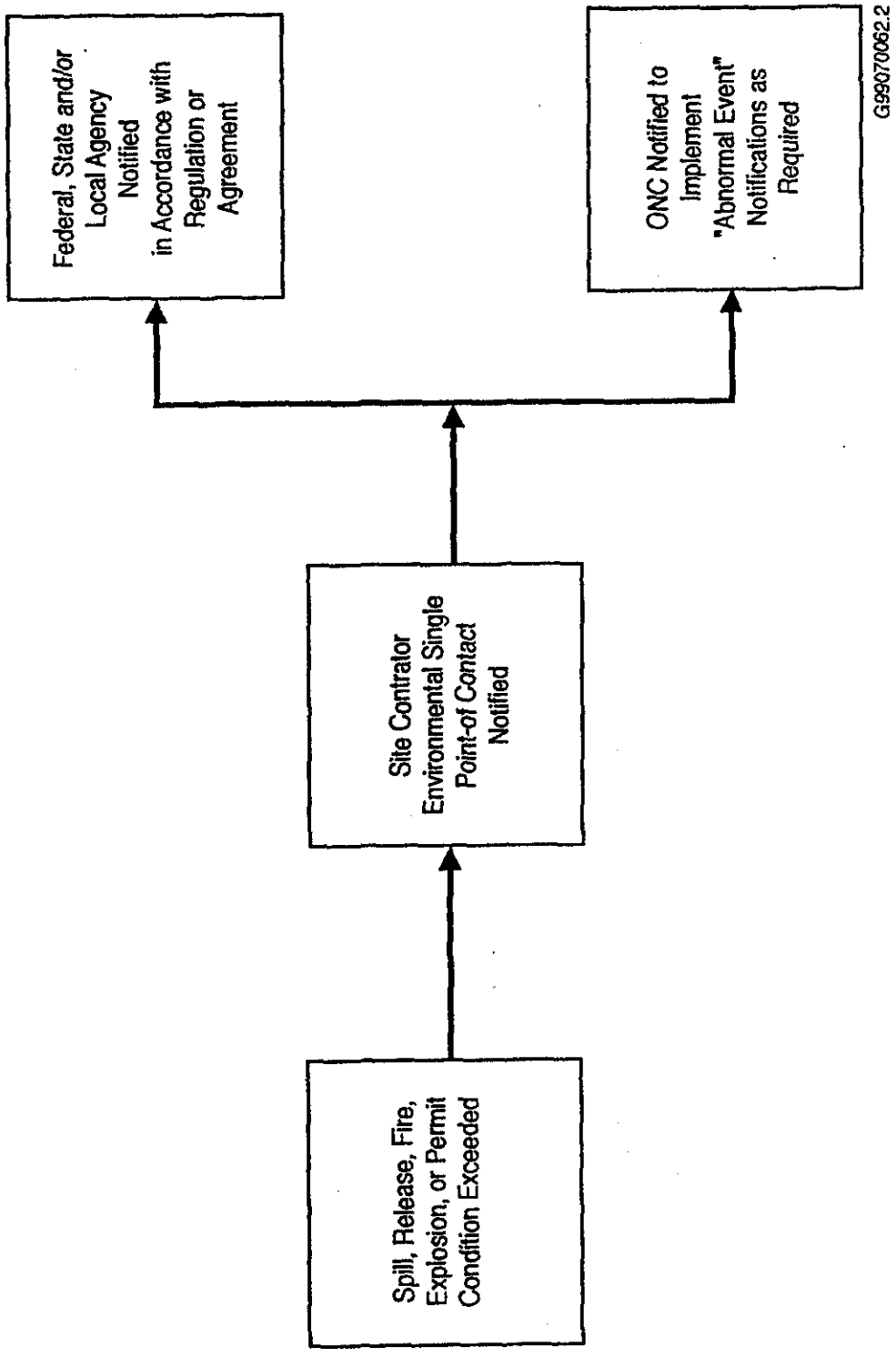
There are a variety of events or situations that may occur on the Hanford Site that, while not creating or indicating an emergency condition, may generate public concern or media interest. Local, state and tribal entities need timely information on these events in order to reassure the public that these situations do not threaten their health or safety.

RL shall maintain a process to advise offsite entities of situations - termed Abnormal Event - which may generate public concern or media interest. RL will work with appropriate offsite entities to maintain the criteria to be used to initiate the Abnormal Event notifications, the notification procedure, and a list of entities to be notified. Additionally, RL shall notify the site contractors when criteria change. The Abnormal Event notification process is further delineated in the Hanford implementing directive HFID 232.1B, *Notification, Reporting, and Processing of Operations Information.*

Site contractors are responsible to ensure that events meeting the HFID 232.1B Abnormal Event notification criteria at their respective facilities are promptly reported to the ONC. The ONC will initiate Abnormal Event notifications when notified of a situation which meets the agreed upon criteria. Additionally, offsite agencies will notify the ONC if public or media inquiries indicate the need to initiate notifications.

Permit requirement: Subsection 5.1.2.1, Class 1 Modification 9/30/99
Permit requirement: Subsection 5.1.2.2, Class 1 Modification 9/30/99
Permit requirement: Subsection 5.1.2.3, Class 1 Modification 9/30/99

Figure 5-3. Environmental Notifications.



5.2 COMMUNICATIONS

Effective communications methods shall be established between event scene responders, emergency managers, and response facilities. Provisions shall also be established for continuing effective communication (i.e., back up means of communication) among the response organizations throughout an emergency. To minimize the potential for confusion in disseminating information, the simplest, most direct system for communications should be established.

The communications system shall provide for designated point(s) of contact for receipt of notifications; compatibility with other Federal, tribal, state, and local response organizations; and rapid dissemination of information received to provide for timely and effective response actions.

5.2.1 Telephone Number 911

The Hanford Site emergency number for requesting emergency response is 911. This number shall be monitored and recorded at all times by the Hanford Patrol at the POC. The 911 emergency number shall be called when emergency conditions exist that requires responses from the Hanford Patrol or Hanford Fire (including ambulance or the Hazardous Materials Response Team), or whenever there is any doubt as to the conditions present.

Where cellular telephone is the only method of communication, onsite emergency response may be requested by calling the POC at 373-3800.

5.2.2 Telephone Number 373-3800

This is the 24-hour business telephone number for the POC. Additionally, this number is used as the Hanford Site single point-of-contact number for notification of offsite transportation events involving RL/ORP-owned hazardous materials shipments.

5.2.3 Telephone Number 376-2900

This is the Hanford Site telephone number for reporting occurrences to the ONC in accordance with occurrence reporting requirements. This number shall be monitored at all times by ONC personnel.

5.2.4 Site Contractor Environmental Single Point-Of-Contact

Each site contractor shall maintain a communications mechanism (e.g., telephones, pagers) in order to perform the notifications described in subsection 5.1.2.1.

5.2.5 Onsite Crash Alarm Telephone System

The crash alarm telephone system is composed of dedicated telephones (red in color) which are activated through a conference bridge to provide a quick, reliable, and interactive medium for simultaneously disseminating emergency messages, protective actions, and information to key personnel at various, individual locations. The system is activated by the POC at the direction of the BED or the IC.

Independent crash alarm telephone systems provide coverage for the 100B/C, 100DR, 100H, 100K, 100N, 200, 300, and 400 Areas.

5.2.6 Emergency Notification System

The ENS provides a medium for rapidly relaying emergency messages and information to key emergency personnel by the use of a computerized calling and message-delivery system, with the capability to record selected responses. The ENS is used to notify/activate emergency center response personnel. The ENS shall be initiated by the ONC.

5.2.7 Priority Message System

The priority message system or management bulletin is a network of e-mail and/or facsimile machines used to disseminate information to Hanford Site employees. Priority messages will be developed and disseminated by public affairs personnel.

5.2.8 Radios

Multiple radio systems and frequencies are available for emergency communications. A repeater station located on Rattlesnake Mountain provides sitewide communications capability.

Radio transmissions, as well as mobile telephone communications, are conducted over frequencies monitored not only by Hanford Site contractors, but also by non-DOE personnel and the general public. Extra precautions shall be taken to prevent communication of sensitive information during regular and emergency communications (such as names and speculative information).

5.2.9 Incident Command Post Communications

The ICP shall have communications to facilities outside of the affected event scene. Methods of communication include the use of:

- commercial telephone (adjacent buildings should be identified where commercial telephones are available);

- cellular telephone; and
- portable and/or fixed radio with capability to transmit on the Hanford Site safety network, Hanford Patrol, or Hanford Fire frequencies.

5.2.10 U.S. Department of Energy Hanford Emergency Operations Center Communications

The DOE Hanford EOC shall have appropriate methods of communications including backup communications. These shall include:

- commercial telephone;
- cellular telephone; and
- portable and/or fixed radio with capability to transmit on the Hanford Site safety network, Hanford Patrol, or Hanford Fire frequencies.

Additionally, the following two dedicated networks will be maintained.

- The DOE Crash Alarm Telephone System which establishes a conference bridge with:
  - Energy Northwest;
  - Benton County;
  - Franklin County;
  - Grant County;
  - Washington State;
  - Oregon State;
  - Hanford POC;
  - ONC; and
  - DOE Hanford EOC.

  NOTE: This system will be used by the ONC to make initial notifications of emergency classification and PARs, and by the DOE Hanford EOC to make subsequent notifications of emergency classifications or reclassification, PARs, and emergency termination.

- The ERO Communications Line that establishes a conference bridge and is the primary method to communicate event information between the DOE Hanford EOC and the ICP.

5.2.11 Secure Communications

Secure communications in the DOE Hanford EOC shall be accomplished, as necessary, using the Secure Telephone Unit III (STU-III) telephone system. This system enables establishment of a secure, closed network for voice communications.

5.2.12 Emergency Signals

Table 5-1 lists the standard Hanford Site emergency signals, their meanings, and normal response actions.

Table 5-1. Standard Emergency Signals.

SIGNAL	MEANING	ACTIONS
Gong/electronic chime	*Fire*	*Vacate building; proceed to staging area.*
Steady tone on whistle, Klaxon horn, or siren	Area evacuation	Vacate building; proceed to evacuation staging area. Personnel in vehicles shall proceed to the nearest facility staging area and report to the staging area manager.
Wavering siren or short blasts on whistle, klaxon horn or siren	Take cover (shelter)	Proceed to shelter or stay indoors. Close all exterior doors, turn off all intake ventilation (as applicable), and notify manager of whereabouts. Personnel in vehicles shall proceed to the nearest occupied facility and report to facility management.
AH-00-GA horn (howler) or flashing blue light (in high noise areas)	Nuclear criticality	Run at least 100 feet from building; proceed to staging area.
Red light with ringing bell	Air contamination	Stop work activities; immediately exit the area; notify Radiological Control personnel.
Ringing of a red crash alarm telephone	Emergency communications	Lift receiver, do not speak, listen to caller, and relay message(s) to the BED/BW and the building occupants.

Hanford Facility RCRA Permit Modification Notification Form
Part II, General Facility Conditions

Index

Page 2 of 2: Hanford Facility RCRA Permit Condition II.A.1

Hanford Facility RCRA Permit Modification Notification Form	
Unit: **Hanford Facility RCRA Permit**	Permit Part & Chapter: **Part II General Facility Conditions**

Description of Modification:
Hanford Facility RCRA Permit Condition II.A.1.:

PART II GENERAL FACILITY CONDITIONS

II.A. FACILITY CONTINGENCY PLAN

II.A.1 The Permittees shall immediately carry out applicable provisions of the Hanford Emergency Management Plan as provided in Attachment 4, pursuant to WAC 173-303-360(2), whenever there is an incident meeting the criteria of Attachment 4, Section 4.2. ~~release of dangerous waste, or dangerous waste constituents, or other emergency circumstance, either of which threatens human health or the environment.~~

Modification Class: 12 3	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation:
A. General Permit Provisions
1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
R. H. Gurske 22Mar01	J. Hebdon 4/10/01		
R. H. Gurske Date	J. Hebdon Date	S. Moore Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate

Hanford Facility RCRA Permit Modification Notification Forms
Part III, Chapter 2 and Attachment 18
305-B Storage Facility

Index

Page 2 of 6: Chapter 2.0, Section 2.8
Page 3 of 6: Chapter 2.0, Section 2.8.1
Page 4 of 6: Chapter 2.0, Section 2.8.3.2
Page 5 of 6: Chapter 6.0, Section 6.3.1.3
Page 6 of 6: Chapter 6.0, Section 6.4.5

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III, Chapter 2 and Attachment 18**

Description of Modification:

Remove and replace Chapter 2.0 with the attached Chapter 2.0.

Chapter 2.0, Section 2.8:

2.8 MANIFEST SYSTEM [B-8]

The Hanford Site has one EPA/state identification number, as required by WAC 173-303-060, and all TSD units on the Hanford Site (such as 305-B Storage Facility) are considered to be part of one dangerous waste facility. Therefore, onsite shipments of dangerous or mixed waste are not subject to the manifesting requirements specified in WAC 173-303-370 and -180. 305-B Storage Facility has an onsite waste tracking system akin to a manifest system, which is voluntarily used for transporting waste on the Hanford Facility.

~~The~~ An example of a Uniform Hazardous Waste Manifest (Figure 2-7) is used for all off-site shipments of dangerous waste and RMW received at 305-B Storage Facility, as well as for all off-site shipments of dangerous waste and RMW from 305-B Storage Facility. In addition to the Uniform Hazardous Waste Manifest, wastes subject to land disposal restrictions which are shipped from 305-B Storage Facility to off-site treatment, storage, or disposal facilities are accompanied by the applicable notifications and certifications required under 40 CFR 268 (EPA 1989).

The following sections provide information on receiving shipments, response to manifest discrepancies, and provisions for nonacceptance of shipments.

	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
A.K. Ikenberry Date 3/19/01	R.F. Christensen Date 3/4/01	F. Jamison Date	L.E. Ruud Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III, Chapter 2 and Attachment 18**

Description of Modification:

Remove and replace Chapter 2.0 with the attached Chapter 2.0.

Chapter 2.0, Section 2.8.1:

2.8.1 Procedures for Receiving Shipments [B-8a]

The following are procedures used prior to transport of wastes to the 305-B Storage Facility. First, the generator must submit a Chemical Disposal/Recycle Request ~~(Figures 2-8 and 2-9)~~ form to the Waste Management Section. An example of a Chemical Disposal/Recycle Request form is shown in Figure 2-8. This request form is then reviewed and either approved or rejected. Typical causes of rejection include missing or insufficient information in any of the data fields, or lack of specific information on waste composition. Waste information required to treat, store, or dispose of the waste is noted in Figure 2-8~~Section 3.1~~. Upon approval, the Waste Management Section reviews the form to determine the dangerous waste designation, waste compatibility class for storage, and containerization and labeling requirements.

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	3/19/01 Date	R.F. Christenson	4/4/01 Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	**Part III, Chapter 2 and Attachment 18**

Description of Modification:

Remove and replace Chapter 2.0 with the attached Chapter 2.0.

Chapter 2.0, Section 2.8.3.2:

2.8.3.2 Activation of BEP/Contingency Plan for Damaged Shipment [B-8c(2)].

As described in Section 2.8.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also primarily transported to 305-B Storage Facility by waste management organization staff. Damaged containers will not be accepted from the generator and will not be transported. The only opportunity for receipt of damaged containers, therefore, would be if containers were damaged during transportation. If a shipment of waste is damaged during transportation and arrives in a condition as to present a hazard to public health or to the environment, the facility BEP/contingency plan will be implemented as described in Chapter 7.0.

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
A.K. Ikenberry 3/19/01	R.F. Christensen 4/4/01		
A.K. Ikenberry Date	R.F. Christensen Date	F. Jamison Date	L.E. Ruud Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	Part III, Chapter 2 and Attachment 18

Description of Modification:

Remove and replace Chapter 6.0 with the attached Chapter 6.0.

Chapter 6.0, Section 6.3.1.3:

6.3.1.3 Emergency Equipment [F-3a(3)]

Emergency equipment available for trained 305-B Storage Facility personnel includes portable fire extinguishers, a fire suppression system, spill response equipment, and decontamination equipment. Seven portable 10-lb ABC fire extinguishers, and one 15-lb (or larger) Class D fire extinguisher for combustible metals, are available at various locations throughout 305-B Storage Facility, as shown in Figure 6-4. The 10-lb ABC extinguishers are located: (1) next to the east entrance; (2) northwest end of the basement; (3) southwest end of the high bay; (4) outside of the bulking module door; (5) north of Cell No. 4 entrance; and (6) north-west end of high bay. (7) office area. A 15-lb ABC extinguisher is located outside cell 7. The 15-lb (or larger) class D extinguisher is located on the exterior of the organics cell wall north of the entrance.

The facility is also equipped with an automatic fire suppression system consisting of galvanized steel, schedule 40 per ASTM A120 pipe and 150-lb malleable iron per ANSI B16.3 fittings. All components are UL-listed or FM-approved, and installation of the fire sprinkler system has been conducted in accordance with NFPA 13 for ordinary hazard. Spill cleanup supplies and equipment maintained are summarized in Table 6-2. Four ~~two~~ emergency eye wash/showers are available for emergency personnel decontamination. The locations of the emergency eye wash/showers are shown in Figure 6-4. If needed, the Hanford Fire Department can provide additional emergency equipment. Emergency equipment available through the Hanford Fire Department for hazardous materials response is identified in Appendix 6A

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

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Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
A.K. Ikenberry	3/19/01 Date	R.F. Christensen	4/4/01 Date	F. Jamison	Date	L.E. Ruud	Date

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
305-B Storage Facility	Part III, Chapter 2 and Attachment 18

Description of Modification:

Remove and replace Chapter 6.0 with the attached Chapter 6.0.

Chapter 6.0, Section 6.4.5:

6.4.5 Personnel Protection Equipment [F-4e]

Protective clothing and equipment are provided to employees during normal and emergency operations. During routine operations, the maximum number of employees working in the 305-B Storage Facility is less than fifteen. For dry chemical handling activities, such as labpacking, the minimum protection requirement is eye protection (safety glasses with side shields or chemical goggles), lab coat, and chemical resistant gloves (plastic or other construction as appropriate). Protection levels for other operations, such as bulking, and emergency situations are determined in consultation with a PNNL industrial hygienist, and staffing levels are revised according to the availability of proper protective equipment as shown below. Protective clothing and equipment available in the 305-B Storage Facility includes:

- 6 sets of chemically resistant suits, aprons, boots, and gloves
- 20 pairs of extra protective eyeglasses
- 3 SCBA
- 5 pairs of chemical goggles
- 4 face shields
- 4 full-face respirators with appropriate cartridges.

This protective equipment is stored in cabinets located outside of the operating area east entrance and is well stocked at all times. The location of the storage cabinets is given in Figure 6-4. This equipment is periodically replaced as it is used. The above inventory reflects the quantities of each type of PPE that are typically present at 305-B Storage Facility. Minimum quantities required to be present are given in the weekly inspection checklist found in the Hazardous & Miscellaneous Waste Operations Procedure. ~~weekly inspection checklist, Figure 6-2.~~

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

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A.K. Ikenberry	Date	R.F. Christensen	Date	F. Jamison	Date	L.E. Ruud	Date

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Hanford Facility RCRA Permit Modification
Part III, Chapter 2 and Attachment 18
305-B Storage Facility

Replacement Chapters

Index

Enforceable Chapters	*Non-enforceable Chapters*
Chapter 2.0	Chapter 10.0
Chapter 6.0	

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B]

This chapter briefly describes the Hanford Site and provides a general overview of the 305-B Storage Facility, including:

- Topography
- Location information
- Traffic information
- Performance standards
- Buffer monitoring zones
- Spills and discharges
- Manifest system.

2.1 GENERAL DESCRIPTION [B-1]

This section provides a general description of the Hanford Site and the 305-B Storage Facility.

2.1.1 The Hanford Site

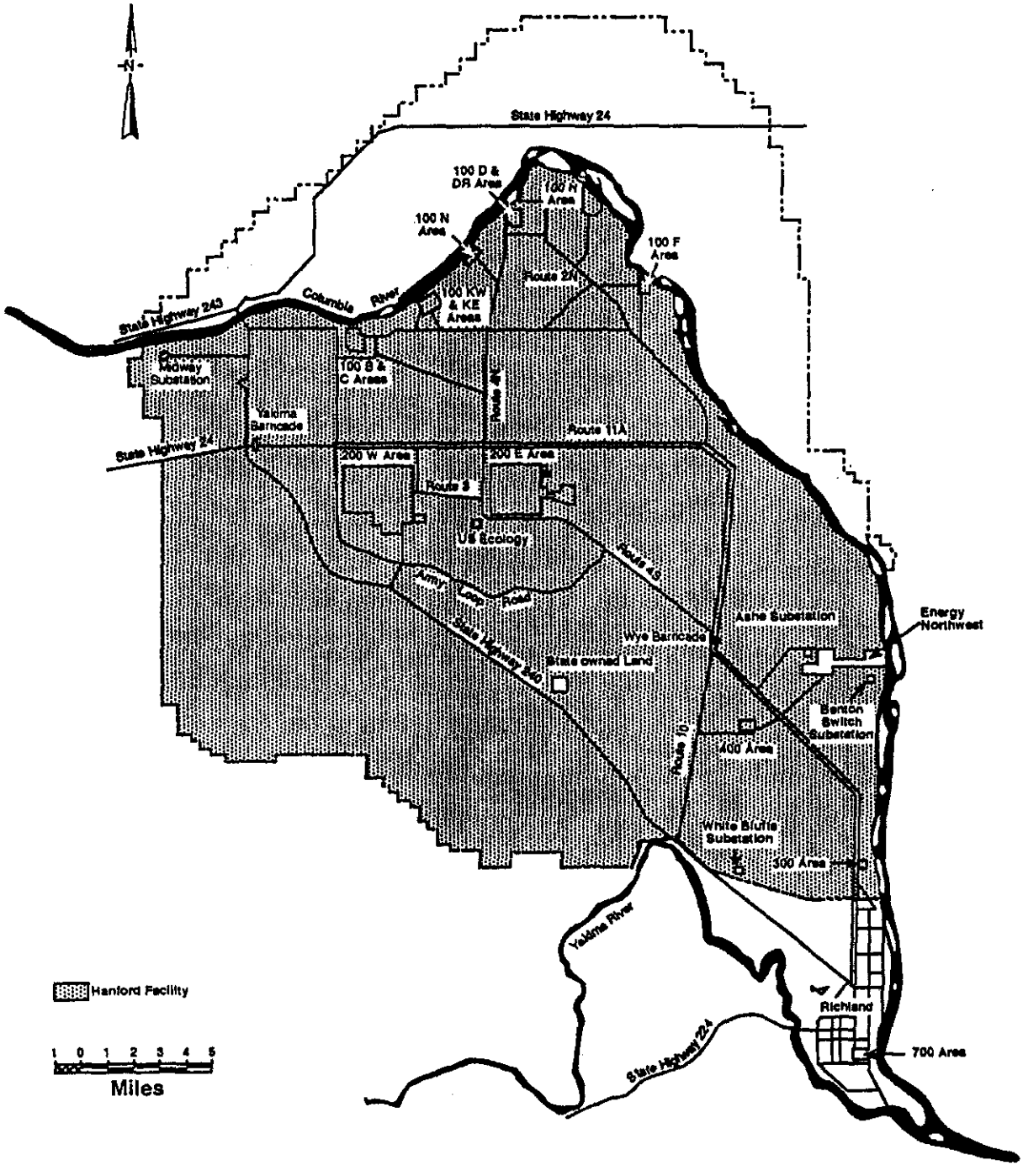
The Hanford Site consists of approximately 560 square miles (1450 square km) of semi-arid land that is owned by the U.S. Government and managed by DOE-RL. This site is located northwest of the City of Richland, Washington, along the Columbia River (Figure 2-1). The City of Richland adjoins the southernmost portion of the Hanford Site boundary and is the nearest population center. In early 1943, the U.S. Army Corps of Engineers selected the Hanford Site as the location for reactor, chemical separation, and related facilities for the production and purification of plutonium. A total of eight graphite-moderated reactors using Columbia River water for once-through cooling were built along the river. These reactors were operated from 1944 to 1971.

N Reactor, a dual-purpose reactor for production of plutonium and generation of byproduct steam for production of electricity, uses recirculating water coolant. N Reactor began operating in 1963 and was placed in permanent shutdown status in 1991.

Activities are centralized in numerically designated areas on the Hanford Site. The reactor facilities (active and decommissioned) are located along the Columbia River in the 100 Areas. The reactor fuel processing and waste management facilities are located in the 200 Areas, situated on a plateau about 7 miles (11.2 km) from the river. The 300 Area, located north of Richland, contains mostly reactor fuel manufacturing facilities and research and development laboratories. The 400 Area, 5 miles (8 km) northwest of the 300 Area, contains the Fast Flux Test Facility. The 1100 Area, north of Richland, contains buildings associated with maintenance and transportation functions for the Hanford Site. Administrative buildings and other research and development laboratories are found in the 3000 Area, also north of Richland. Administrative buildings are also located in the 700 Area in downtown Richland.

1

Figure 2-1. Hanford Site Location



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2.1.2 The 305-B Storage Facility

The 305-B Storage Facility is a dangerous waste and RMW storage unit owned and operated by DOE and co-operated by PNNL. The unit is used for the collection, consolidation, packaging, storage, and preparation for transport and disposal of both dangerous waste and RMW. It is an integral part of the Hanford Site's waste management system.

The 305-B Storage Facility is a one-story frame and masonry building with basement constructed in the early 1950s, with an attached two-story-high metal and concrete building constructed in January 1978, referred to in this document as the "high bay." The unit is located within the 300 Area, as shown in Figure 2-2, and was formerly used for engineering research and development. Unit upgrades were completed in 1988 to meet requirements for storage of dangerous waste and RMW. Waste storage under interim status began in March 1989.

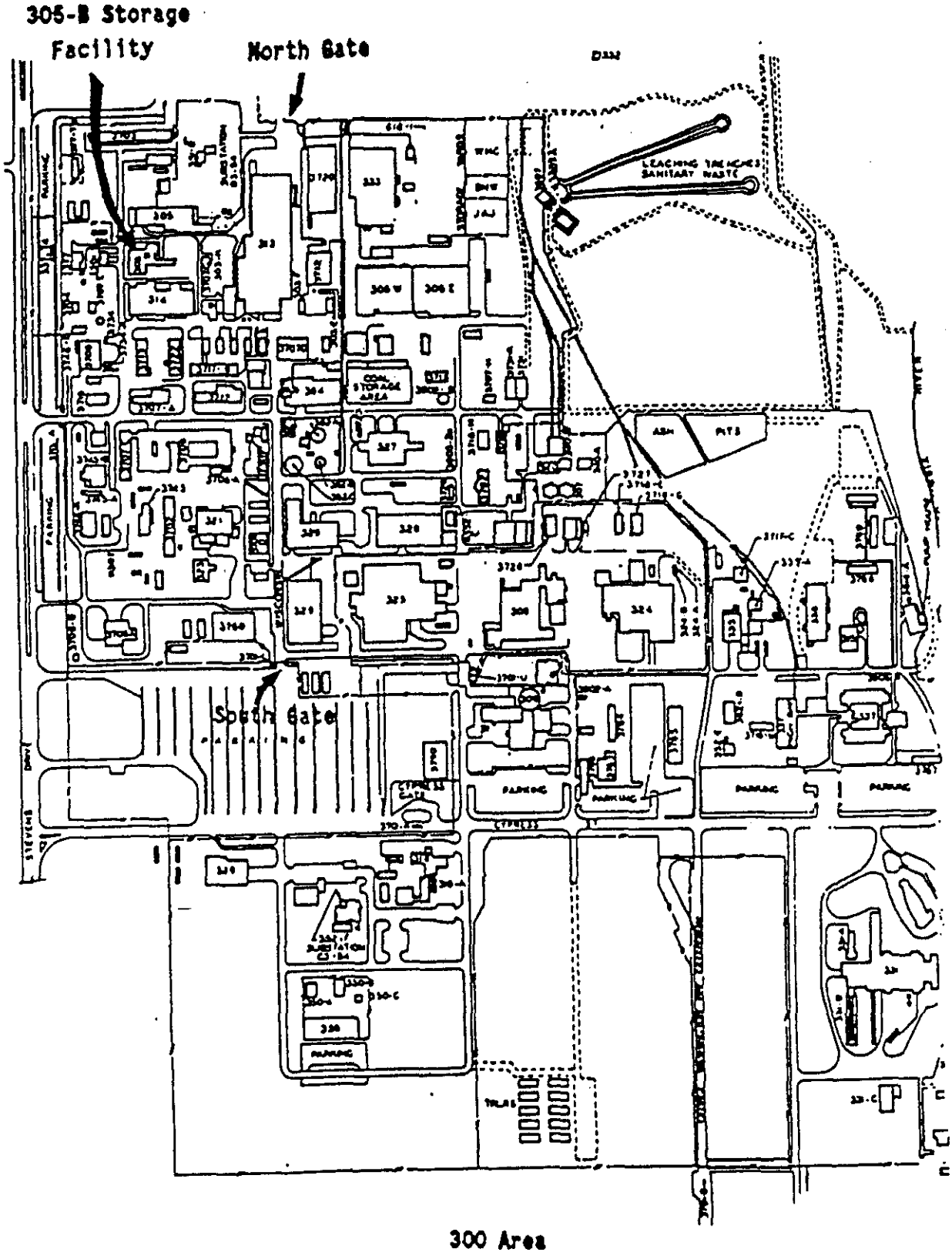
A variety of small volume chemical wastes are generated by PNNL's research laboratory activities under contract to DOE. These wastes are brought to the 305-B Storage Facility and segregated by compatibility for storage in the unit until enough waste is accumulated to fill a labpack or bulking container, usually a 30- to 55-gallon drum. When a sufficient number of shipping containers of waste have accumulated, they are manifested for shipment, generally to permitted off-site recycling, treatment or disposal facilities.

Dangerous wastes are stored in the high bay. The high bay has been equipped with a secondary containment system to facilitate storage of containerized wastes. In addition, four storage "cells" have been constructed within the high bay area for segregated storage of incompatible waste streams. Each of the cells is approximately 14' x 14', enclosed by 4' high concrete block walls; each cell has its own separate secondary containment system. Drum-quantity storage for incompatible wastes has also been provided in separate areas in the southeast corner of the high bay.

Radioactive mixed waste (RMW) is stored in the basement of the original wing of the building in an area approximately 18' x 32'. The RMW area is also equipped with a secondary containment berm to prevent migration of spilled wastes. Flammable RMW cannot be stored below grade (per Uniform Fire Code) and is stored in an independent area on the first floor of the original wing in individual secondary containment structures.

The 305-B Storage Facility is equipped with a heating, ventilation and air conditioning (HVAC) system to provide relatively constant temperatures during storage of dangerous wastes. The first floor of the older building and the high bay are served by a dual-compressor heat pump system for both heating and air conditioning. The basement area is served by a separate electric heating and evaporative cooling combined system. These systems, detailed in Plates 4-10 through 4-14 of Appendix 4A, are adequate to maintain interior temperatures in the range of 50-85°F during normal ambient temperatures of 10-110°F.

Figure 2-2. Location of 305-B Storage Facility



In addition, the unit utilizes a local exhaust system for "bulking" as described in Section 4.1.1.2. This system is located in the flammable liquid bulking module. Local exhaust of 3300 CFM is provided during bulking operations. Another, smaller ventilation system, referred to as the "elephant trunk ventilation system," is located in the high bay storage cell areas for occasional bulking of solids or nonflammable liquids not requiring use of the flammable liquid bulking module. This system has a ventilation capacity of 1550 CFM. These local exhaust systems are detailed in Plates 4-13 and 4-14 of Appendix 4A. A smaller, laboratory-style fume hood has also been installed on the south wall of the high bay for compatibility testing and small-volume waste work.

A simplified building layout is shown in Figure 2-3. Individual storage cells are described in Section 4.1.

2.2 TOPOGRAPHIC MAP [B-2]

Topographic maps of the Hanford Site and 300 Area are provided in Appendix 2A. Information presented on these maps is discussed in the following sections.

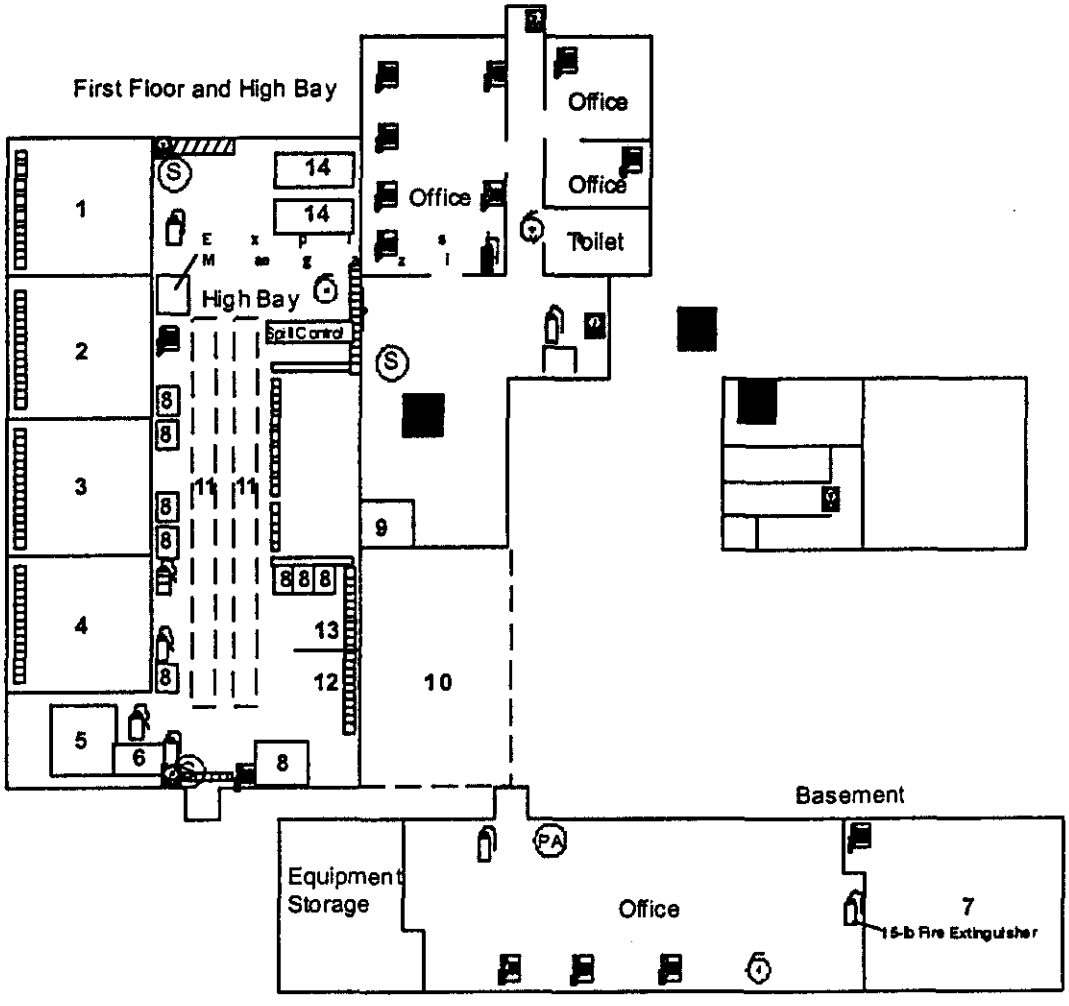
2.2.1 General Requirements [B-2a]

Plate 2-1 in Appendix 2A is a general overview map of the Hanford Site property and the surrounding countryside. This figure is intended as a location map and illustrates the following:

- The facility boundary of the Hanford Site
- Surrounding land use including the Saddle Mountain National Wildlife Refuge and the State Game Reserve to the north, the City of Richland to the south, Rattlesnake Mountain Arid Lands Ecology (ALE) Reserve located to the west, and farmlands or Game Reserves to the east
- Contours sufficient to show surface water flow
- Locations of the various Areas described in Section 2.1.1
- Fire control facilities located on the Hanford Site
- Locations of access roads, internal roads, railroads, and perimeter gates and barricades
- Latitudes and longitudes.

Plates 2-2 through 2-9 in Appendix 2A provide a detailed representation of the Hanford 300 Area where the 305-B Storage Facility is located. These maps provide a detailed profile of the unit and a distance of 1,000 ft around it at a scale noted on the drawings. Contour intervals are shown at every foot, and provide sufficient detail of surface waters and flow, access control, buildings, structures, fire control facilities, etc., to meet the requirements of WAC 173-303-806(4)(a)(xviii) (Ecology 1989).

Figure 2-3. 305-B Storage Facility Floor Plan



Legend

1. Acids, Oxidizers
2. Poisons, Class 9's
3. Alkalines, WSDW, Organic Peroxides
4. Organics and Compressed Aerosols
5. Flammable Liquid Bulking Module and compressed gases
6. Asbestos Cabinet
7. RMW Storage Cell
8. Flammable Storage
9. Small Quantity Flammable RMW
10. Outdoor Non-Regulated Drum Storage
11. WSDW/ORM/Non-Reg Drums
12. Oxidizer Drums
13. Acid Drums
14. Alkaline Drums

- Safety Shower/Eyewash
- Phone
- Fire Alarm Bell
- Fire Alarm Pull Box
- 14-lb Halon Fire Extinguisher
- 10-lb ABC Fire Extinguisher
- 15-lb Class D Fire Extinguisher
- Removable Access to Basement
- Emergency Equipment Cabinet
- Collection Sumps

Figure 2-4 illustrates wind roses for various locations on the Hanford Site. Winds are predominately from the west.

2.2.2 Additional Requirements for Land Disposal Facilities [B-2b]

Because 305-B Storage Facility is used only for the storage of dangerous waste and not waste disposal to land, these requirements are not applicable.

2.3 LOCATION INFORMATION [B-3]

The 305-B Storage Facility is located in the northwest corner of the 300 Area, as shown in Figure 2-2. The following sections contain information related to the location requirements for dangerous waste facilities.

2.3.1 Seismic Consideration [B-3a]

The 305-B Storage Facility is located in Benton County, Washington, and is not within one of the political jurisdictions identified in Appendix VI of Title 40 Code of Federal Regulations (CFR) Part 264 (EPA 1988). Therefore, no further demonstration of compliance with the seismic standard is required.

2.3.2 Floodplain Standard [B-3b]

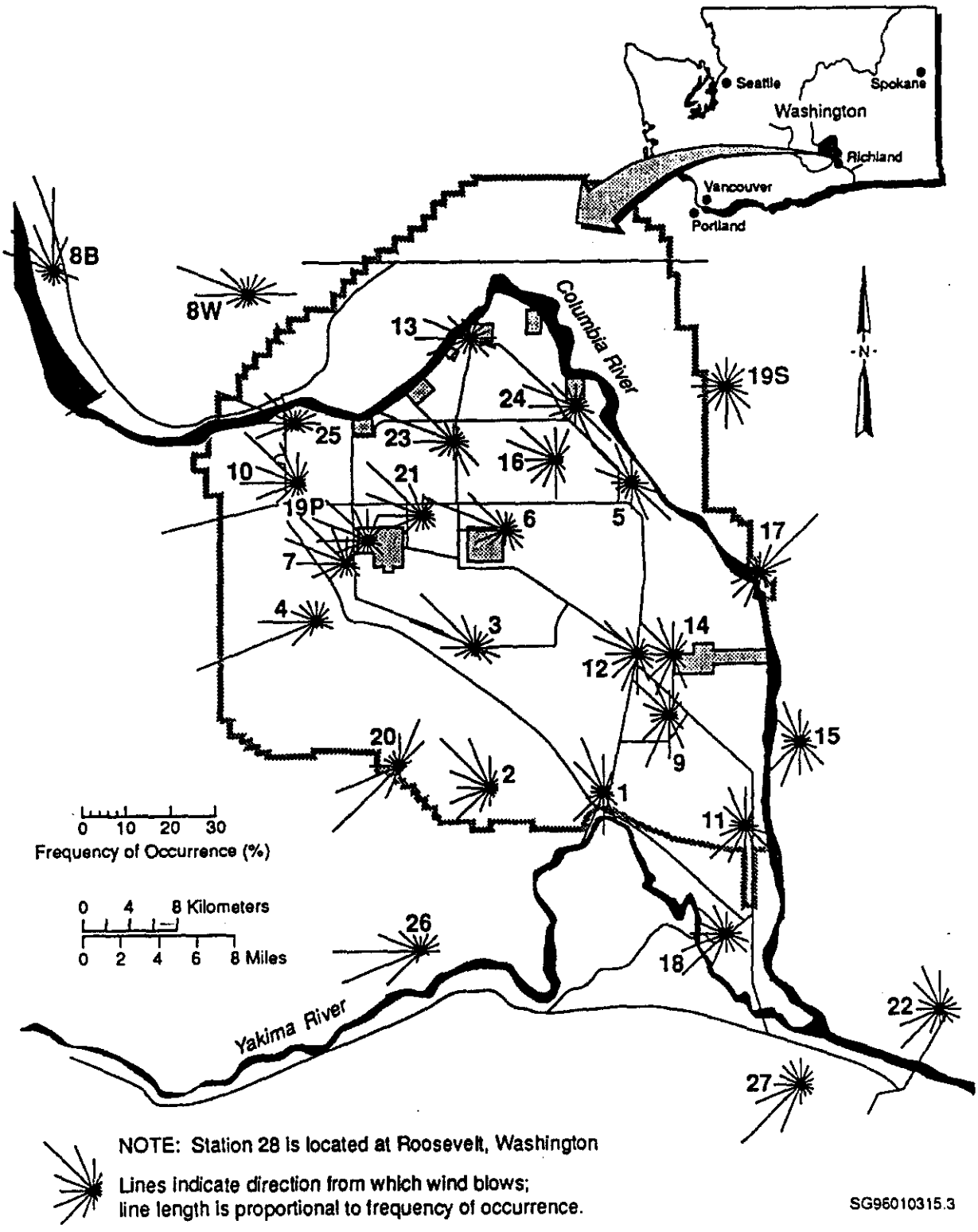
The 305-B Storage Facility is located in the 300 Area, which is adjacent to the Columbia River, approximately at river mile 345. Floods of the Columbia River were, therefore, considered for determining compliance with floodplain standards. Floods of other water bodies (i.e., the Yakima River, ephemeral streams on the Hanford Site) were not considered because of their great distance when compared to the distance to the Columbia River.

One hundred-year floodplains are identified in flood insurance rate maps developed by the Federal Emergency Management Agency (FEMA). The FEMA maps for Benton County, Washington, do not include the Hanford Site. Determination of whether 305-B Storage Facility is located in a 100-year floodplain, therefore, was made by comparing the land surface elevation at 305-B Storage Facility with the nearest downstream 100-year flood base elevation identified on the FEMA maps for Benton County. The nearest 100-year floodplain identified on the Benton County FEMA maps is at Columbia Point, approximately nine miles downstream of 305-B Storage Facility at river mile 336. The FEMA map for this area (FEMA 1982) identifies a 100-year flood base elevation of 352 ft above mean sea level (AMSL). This elevation is significantly below the elevation of 305-B Storage Facility, which is 387 ft AMSL (see topographic maps in Appendix 2A).

The potential for the 305-B Storage Facility to be inundated during a flood was also evaluated by comparison to the maximum probable flood for the Columbia River, which is greater than the 100-year flood level.

1

Figure 2-4 . Wind Roses for the Hanford Site



NOTE: Station 28 is located at Roosevelt, Washington

Lines indicate direction from which wind blows;
line length is proportional to frequency of occurrence.

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The Army Corps of Engineers (COE) has calculated the probable maximum flood for the Columbia River based on the upper limit of precipitation falling on a drainage area and other hydrologic factors such as antecedent moisture conditions, snowmelt, and tributary conditions that could lead to maximum run-off. The probable maximum flood for the Columbia River below Priest Rapids Dam has been calculated to be 1.4 million cubic feet per second (COE 1969). This flow would result in flood elevations of 423 ft AMSL at the 100-N Area and 384 ft AMSL at the 300 Area. Figure 2-5 shows those portions of the Hanford Site, which would be affected by the probable maximum flood. The location of 305-B Storage Facility is at 387 AMSL. Because the unit is constructed on relatively flat topography, the 3-ft differential between the maximum flood level and the elevation of the storage facility corresponds to an areal separation of approximately 1,500 ft. Therefore, the location of 305-B Storage Facility is safe from flooding and thus meets the floodplain standard.

2.3.2.1 Demonstration of Compliance [B-3b(1)].

Because the location of the 305-B Storage Facility is not within the boundary of the 100-year floodplain, no demonstration of compliance is required.

2.3.2.1.1 Flood Proofing and Flood Protection Measures [B-3b(1)(a)]. Because the 305-B Storage Facility is not within the boundary of the 100-year floodplain, no demonstration of compliance is required.

2.3.2.1.2 Flood Plan [B-3b(1)(b)]. Because the 305-B Storage Facility is not within the boundary of the 100-year floodplain, no demonstration of compliance is required.

2.3.2.2 Plan for Future Compliance With Floodplain Standard [B-3B(2)]

Because the location of the 305-B Storage Facility is not within the boundary of the 100-year floodplain, no demonstration of compliance is required.

2.3.3 Shoreline Standard [B-3c]

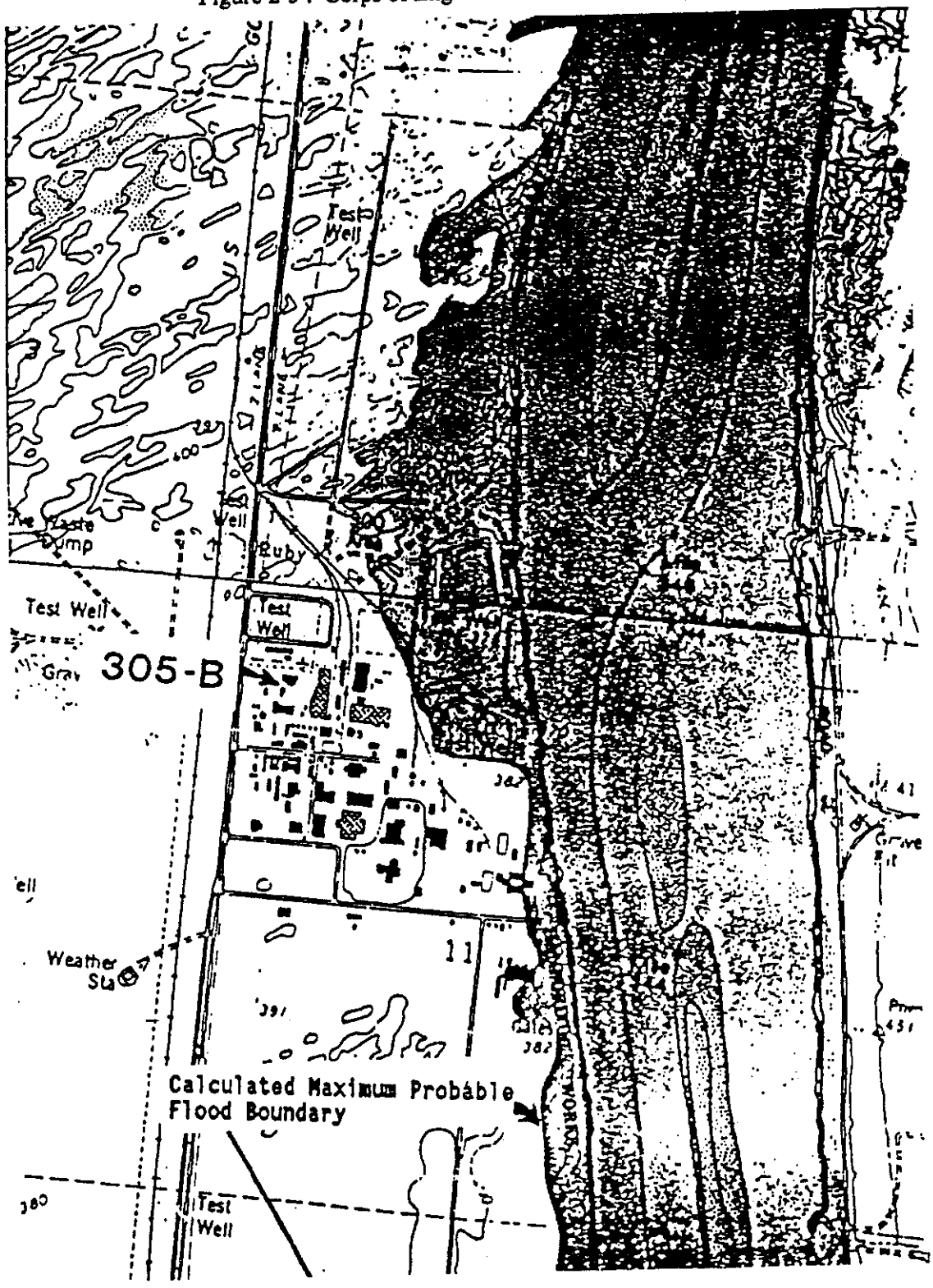
The 305-B Storage Facility is not located within "shorelines of the state" or "wetlands" as defined in the Shoreline Management Act of 1971 (Revised Code of Washington [RCW] 90.58.030[2]). 305-B Storage Facility is located approximately 2,600 ft from the Columbia River (a "shoreline of state-wide significance" as defined in the Shoreline Management Act), but is not within the wetland area (i.e., within 200 ft of the high water mark).

The Hanford Site is owned by the U.S. Government and operated by DOE-RL. The Hanford Site has been used for production and test reactor operations and related activities since 1943. The Hanford Site is not classified as natural, conservancy, rural, or residential.

2.3.4 Sole Source Aquifer Criteria [B-3d

The 305-B Storage Facility is not located over a sole source aquifer as defined in Section 1424(e) of the Safe Drinking Water Act of 1974.

Figure 2-5 . Corps of Engineers Calculated Floodplain



2.4 TRAFFIC INFORMATION [B-4]

The DOE-controlled Hanford Site is traversed by numerous primary and secondary roads as shown by Figure 2-6. The DOE roadways inside the site, except for Routes 4S and 10 south of the Wye Barricade, are restricted to authorized personnel and cannot be accessed by the general public. The majority of the site traffic consists of light duty vehicles. Primary routes include Routes 4S, 10, 4N, 2N, 1, 6, 11A, as well as various avenues within the site boundary. The primary routes are constructed of bituminous asphalt (usually 2 inches thick, but the thickness of the asphalt layer will vary with each road) with an underlying aggregate base in accordance with U.S. Department of Transportation (DOT) requirements. The secondary routes are constructed of layers of an oil and rock mixture with an underlying aggregate base. The aggregate base consists of various types and sizes of rock found on site. Currently, no load-bearing capacities of these roads are available; however, loads as large as 140 pounds per square inch have been transported without observable damage to road surfaces. Access to the 300 Area by vehicular traffic is by Stevens Drive and George Washington Way. Traffic on Stevens Drive consists of personal vehicles, buses for the transport of personnel to and from work, and light duty trucks for the transport of materials. Traffic on George Washington Way consists almost exclusively of personal vehicles.

Wastes generated at other onsite facilities outside the 300 Area are transported over Government-maintained roads as shown in Figure 2-6. These roads are accessible to the general public only south of the Wye Barricade as shown in the figure. In addition, waste shipments from 305-B Storage Facility to offsite treatment, disposal or recycling facilities are generally shipped over publicly accessible roads enroute to the consignee.

Wastes generated at laboratories within the 300 Area are transported to 305-B Storage Facility principally over roads, which are not accessible to the general public. All access to the 300 Area (except the outer parking lot) is controlled by DOE and limited to site personnel holding appropriate clearances. In the immediate area of the 305-B Storage Facility, vehicular traffic is limited to vehicles on official business. Traffic destined for the 305-B Storage Facility travels over roads designed to handle truck traffic. Traffic in and out of the unit averages 1-5 vehicles per day. Traffic destined for adjacent facilities averages 10-15 vehicles per day and ranges from passenger cars to heavy trucks. All roads within the 300 Area are paved, all-weather roads. There are no traffic signals within the 300 Area.

2.5 PERFORMANCE STANDARD [B-5]

The 305-B Storage Facility was designed to minimize the exposure of personnel to dangerous wastes and hazardous substances and to prevent dangerous wastes and hazardous substances from reaching the environment.

In addition, measures are taken to ensure that 305-B Storage Facility is maintained and operated, to the maximum extent practicable given the limits of technology, in a manner that prevents:

- Degradation of groundwater quality
- Degradation of air quality by open burning or other activities
- Degradation of surface water quality
- Destruction or impairment of flora or fauna outside of the facility
- Excessive noise
- Negative aesthetic impacts
- Unstable hillsides or soils

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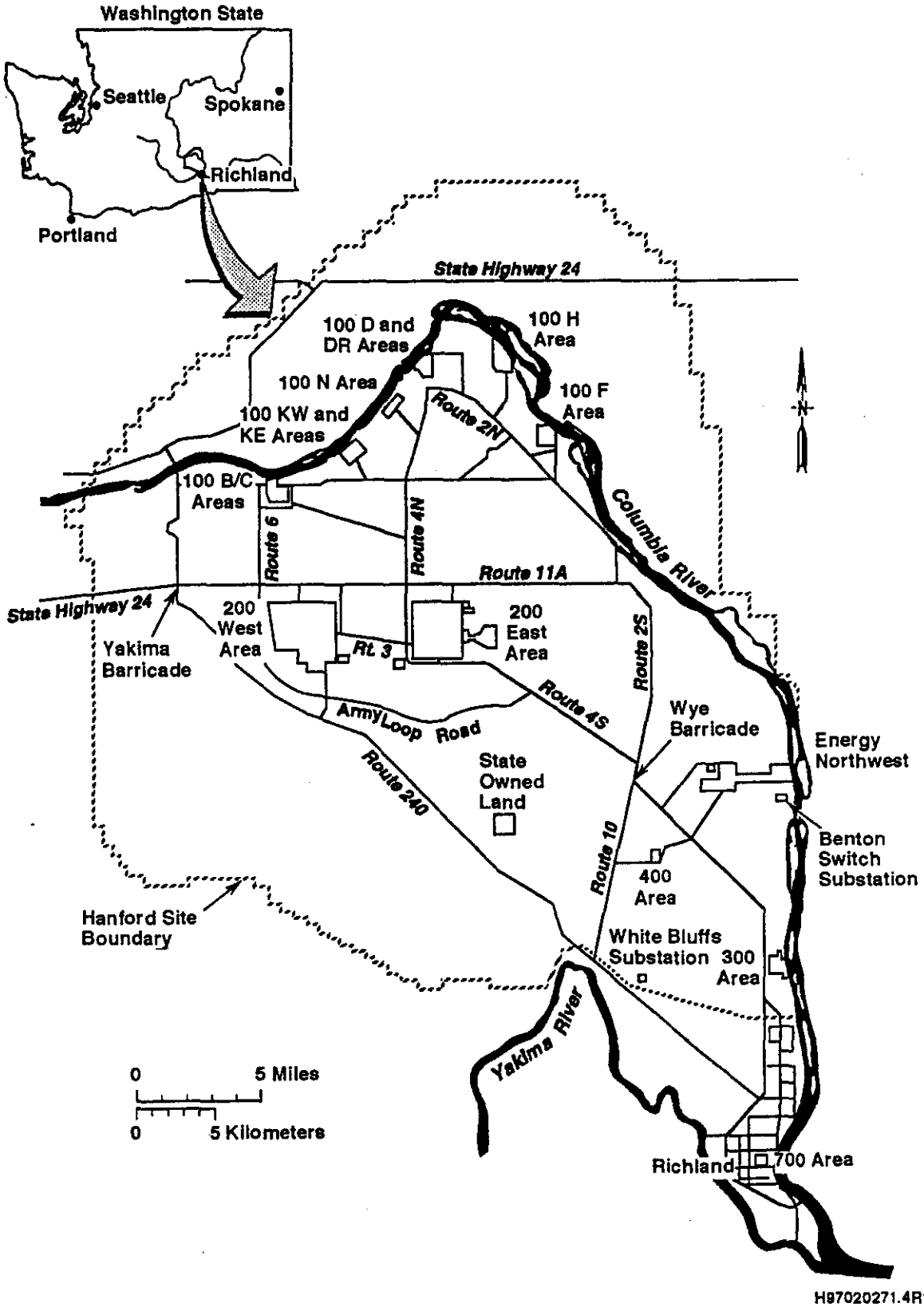
Figure 2-6. Hanford Site Primary and Secondary Roads



2

- Use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible
- Endangerment to the health of employees or the public near the facility.

The measures taken to prevent each of the above negative effects from occurring are described in the following sections.

2.5.1 Measures to Prevent Degradation of Groundwater Quality

Degradation of groundwater quality is prevented by storing waste containers within an enclosed building with a sealed concrete floor. All drains and sumps in areas where wastes are stored are blocked to prevent release of spilled material to the environment. The 305-B Storage Facility accepts only those packages meeting applicable DOT requirements. Opening of containers is done only in areas with spill containment. Design and administrative controls significantly reduce the possibility of release of dangerous waste to the environment through soil or groundwater contamination.

2.5.2 Measures to Prevent Degradation of Air Quality by Open Burning or Other Activities

No open burning occurs at 305-B Storage Facility. There is no vegetation around 305-B Storage Facility and the area around the facility is paved or graveled, thereby reducing the risk of fire or wind erosion. Combustible and flammable waste is packaged in a manner that reduces the potential for fire.

2.5.3 Measures to Prevent Degradation of Surface Water Quality

The potential for degradation of surface water quality is extremely low, due to the manner in which the facility is designed and operated. All waste handling activities (i.e., loading/unloading, container opening, waste transfer) presenting the opportunity for spills are conducted inside the unit. All exits from storage areas of 305-B Storage Facility are equipped with spill collection sumps to prevent spilled material from escaping.

2.5.4 Measures to Prevent Destruction of Impairment of Flora or Fauna Outside of the Facility

305-B Storage Facility is located within the 300 Area. The 300 Area is highly developed and areas not occupied by buildings are generally paved or graveled. As a result, flora or fauna are generally absent within the 300 Area except for several grassed areas. Measures to prevent destruction or impairment of flora or fauna outside the 300 Area are the same as those to prevent releases from the unit (i.e., all waste handling is performed within an enclosed area having spill collection sumps).

2.5.5 Measures to Prevent Excessive Noise

During normal operations at 305-B Storage Facility excessive noise is not generated. The major sources of noise are waste transport and handling equipment (i.e., forklifts, light vehicles). The noise generated at 305-B Storage Facility is compatible with the types of activities generated at neighboring facilities in the 300 Area.

2.5.6 Measures to Prevent Negative Aesthetic Impacts

305-B Storage Facility does not injure or destroy the surrounding flora and fauna. The facility stores waste in approved DOT containers within the confines of the structure. The building's appearance is

similar to neighboring facilities. For these reasons, the facility presents no negative aesthetic impacts.

2.5.7 Measures to Prevent Unstable Hillsides or Soils

There are no naturally unstable hillsides near 305-B Storage Facility. The soil beneath and around the facility was compacted prior to construction.

2.5.8 Measures to Prevent the Use of Processes That Do Not Treat, Detoxify, Recycle, Reclaim, and Recover Waste Material to the Extent Economically Feasible

The 305-B Storage Facility was established, in part, to enhance DOE's and PNNL's efforts to eliminate or minimize dangerous waste generation, and to treat, detoxify, recycle, reclaim and recover waste materials. A full description of the efforts being undertaken at the 305-B Storage Facility to eliminate or minimize waste generation is presented in Chapter 10 of this application.

Offsite waste management options for dangerous wastes being shipped from the 305-B Storage Facility are evaluated according to the following order of preference:

1. Recycling, including solvent reprocessing, oil recycling, metals recovery, burning for energy recovery, etc.
2. Treatment, including incineration, volume and/or toxicity reduction, chemical destruction, etc.
3. Land disposal is viewed as least favored option and is generally only used for treatment residues, spill cleanup residues, or when treatment is not feasible.

When permitted by law and/or contractual obligations, 305-B Storage Facility staff tries to use this hierarchy without regard to minor variations in cost, e.g., if recycling is available but slightly more expensive than land disposal, recycling is utilized.

2.5.9 Measures to Prevent Endangerment to the Health of Employees or the Public Near the Facility

305-B Storage Facility is within the 300 Area, which is located approximately 1 mile north of the corporate limits of the City of Richland. Public entry to the 300 Area is not allowed; members of the public, therefore, cannot enter 305-B Storage Facility. Exposure of members of the public or employees to dangerous and mixed waste constituents is prevented through administrative controls over the designation, packaging, loading, transporting, and storing of the wastes received at 305-B Storage Facility. In addition, physical controls exist (i.e., spill collection sumps) to prevent release of wastes or waste constituents in the event of a spill.

Employees are trained to handle and store waste packages (Chapter 8.0). The training includes dangerous waste awareness, emergency response, and workplace safety. Protective equipment, safety data, and hazardous materials information are supplied by operations management and are readily available for employee use.

A contingency plan, including emergency response procedures, is in place and is implemented for spill prevention, containment, and countermeasures to reduce safety and health hazards to employees, the environment, and the public. The contingency plan is described in Chapter 7.0.

2.6 BUFFER MONITORING ZONES [B-6]

Buffer and monitoring zones around 305-B Storage Facility are described in the following sections.

2.6.1 Ignitable or Reactive Waste Buffer Zone [B-6a]\

Ignitable and reactive wastes are stored in 305-B Storage Facility in compliance with the requirements of the 1991 Uniform Fire Code, Article 79, Division II (International Conference of Building Officials 1991). Quantity limits for storage are established to comply with requirements for Class B occupancy. Structures surrounding 305-B Storage Facility are laboratory and office buildings, which are occupied during normal working hours. The nearest adjacent facility is the 314 Building, which is approximately 30 ft south of 305-B Storage Facility. The closest 300 Area boundary is the western boundary, which is approximately 250 ft west of 305-B Storage Facility.

2.6.2 Reactive Waste Buffer Zone [B-6b]

Storage of certain reactive wastes listed in WAC 173-303-630(8)(a) is done at 305-B Storage Facility. These wastes have special storage requirements more stringent than those shown in Section 2.6.1. They are stored in accordance with this section and with the Uniform Building Code's Table 77.201, latest edition. The 1988 edition requires buffer zones in Class B occupancies of 44 inches for storage of such wastes, and the storage locations in 305-B Storage Facility reflecting appropriate buffer zones are noted in Figure 4-1. These wastes are only occasionally stored at the unit depending on generation by individual research projects.

The occupancy storage limitations imposed by UBC for class B occupancy are as follows:

- Explosives: 1 lb
- Organic Peroxide, unclassified, detonatable: 1 lb
- Pyrophoric: 4 lbs
- Unstable (reactive), Class 4: 1 lb

These limits are allowed to be doubled when stored in flammable storage cabinets, as is done at 305-B Storage Facility; hence, the practical storage limits at 305-B Storage Facility are double those shown here.

2.6.3 Travel Time [B-6c]

Operation of 305-B Storage Facility does not involve the placement of waste in dangerous waste surface impoundments, piles, landfarms, or landfills. Therefore, the requirement that the travel time from the active portion of the unit to the nearest downstream well or surface water used for drinking purposes be at least three years for dangerous waste and 10 years for extremely hazardous waste does not apply.

2.6.4 Dangerous Waste Monitoring Zone [B-6d]

Operation of 305-B Storage Facility does not involve the placement of waste in dangerous waste surface impoundments, waste piles, land treatment, or landfill areas. Therefore, a dangerous waste monitoring zone is not required.

2.6.5 Extremely Hazardous Waste Monitoring Zone [B-6e]

Operation of the 305-B Storage Facility does not involve the placement of waste in dangerous waste surface impoundments, waste piles, land treatment, or landfill areas. Therefore, an extremely hazardous waste monitoring zone is not required.

2.7 SPILLS AND DISCHARGES INTO THE ENVIRONMENT [B-7]

The procedures that are followed to ensure immediate response to a nonpermitted spill or discharge of nonradioactive dangerous wastes or hazardous substances from 305-B Storage Facility to the environment, and the immediate notification of authorities are discussed in Chapter 7.0. As a convenience, checklist items listed below are cross-referenced to the appropriate section or sections of Chapter 7.0.

2.7.1 Notification [B-7a]

Information regarding notifications made to authorities in the event of a nonpermitted spill or discharge of hazardous substances into the environment is included in Chapter 7.0.

2.7.2 Mitigation and Control [B-7b]

Actions taken to protect human health and the environment in the event of a nonpermitted spill or discharge are discussed in Chapter 7.0.

2.7.2.1 Cleanup of Released Wastes or Substances [B-7b(1)].

Actions taken to clean up all released dangerous wastes or hazardous substances and criteria used to determine the extent of removal are described in Chapter 7.0.

2.7.2.2 Management of Contaminated Soil, Waters, or Other Materials [B-7b(2)].

Actions taken to demonstrate that all soil, waters, or other materials contaminated by a spill or discharge are treated, stored, or disposed of in accordance with WAC 173-303 are included in Chapter 7.0.

2.7.2.3 Restoration of Impacted Area [B-7b(3)].

Due to the location of 305-B Storage Facility in the 300 Area, spills or discharges occurring on property, which is not owned by the U.S. Government, are unlikely. Therefore, a description of the actions to be taken to restore the impacted area and to replenish resources is not required.

2.8 MANIFEST SYSTEM [B-8]

The Hanford Site has one EPA/state identification number, as required by WAC 173-303-060, and all TSD units on the Hanford Site (such as 305-B Storage Facility) are considered to be part of one dangerous waste facility. Therefore, onsite shipments of dangerous or mixed waste are not subject to the manifesting requirements specified in WAC 173-303-370 and -180. 305-B Storage Facility has an onsite waste tracking system akin to a manifest system, which is voluntarily used for transporting waste on the Hanford Facility.

An example of a Uniform Hazardous Waste Manifest (Figure 2-7) is used for all off-site shipments of dangerous waste and RMW received at 305-B Storage Facility, as well as for all off-site shipments of dangerous waste and RMW from 305-B Storage Facility. In addition to the Uniform Hazardous Waste Manifest, wastes subject to land disposal restrictions which are shipped from 305-B Storage Facility to off-site treatment, storage, or disposal facilities are accompanied by the applicable notifications and certifications required under 40 CFR 268 (EPA 1989).

The following sections provide information on receiving shipments, response to manifest discrepancies, and provisions for nonacceptance of shipments.

2.8.1 Procedures for Receiving Shipments [B-8a]

The following are procedures used prior to transport of wastes to the 305-B Storage Facility. First, the generator must submit a Chemical Disposal/Recycle Request form to the Waste Management Section. An example of a Chemical Disposal/Recycle Request form is shown in Figure 2-8. This request form is then reviewed and either approved or rejected. Typical causes of rejection include missing or insufficient information in any of the data fields, or lack of specific information on waste composition. Waste information required to treat, store, or dispose of the waste is noted in Figure 2-8. Upon approval, the Waste Management Section reviews the form to determine the dangerous waste designation, waste compatibility class for storage, and containerization and labeling requirements.

1

Figure 2-7. Sample Uniform Hazardous Waste Manifest Form

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name | 6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HM					
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day Year

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Month Day Year

GENERATOR | TRANSPORTER | FACILITY

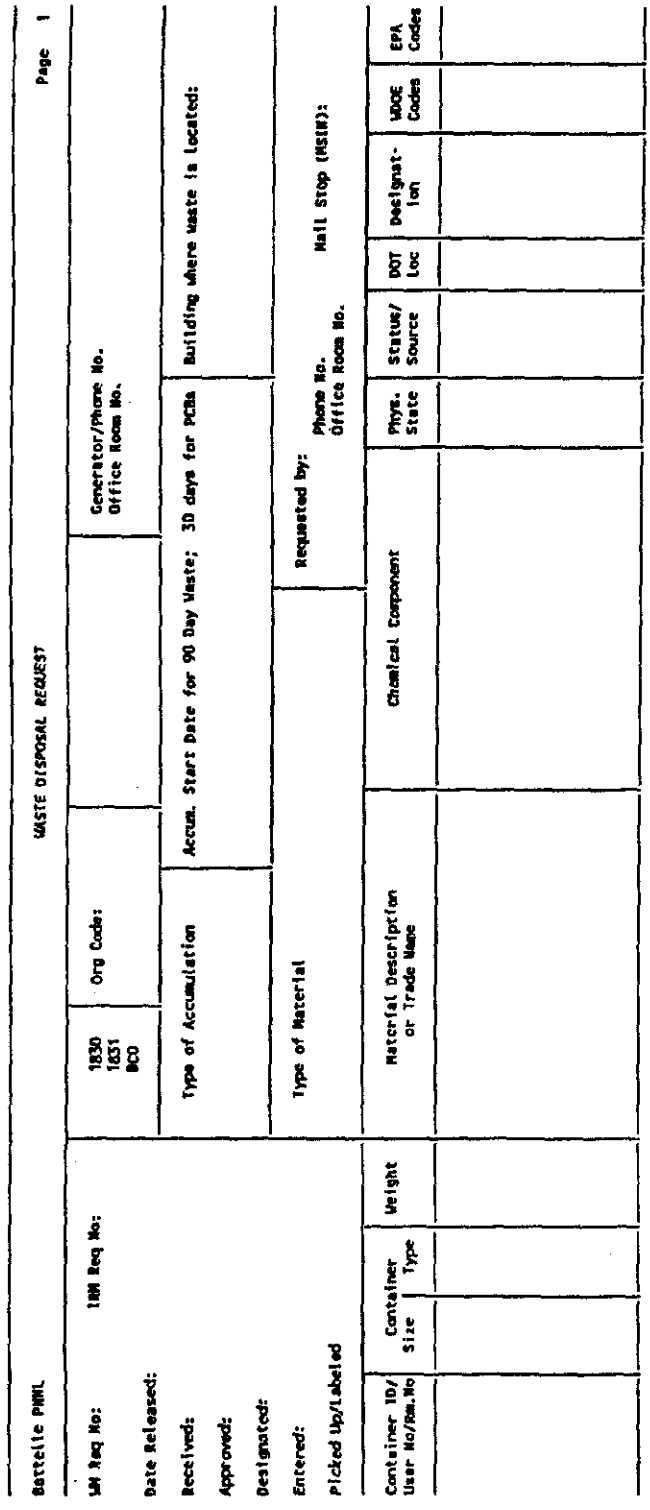
Style F15 Labelmaster, An American Labelmark Co., Chicago, IL 60646 (800) 621 5808

EPA Form 8700-22 (Rev. 9-88) Previous editions are obsolete

PRINTED ON RECYCLED PAPER USING SOYBEAN INK — PRINTED WITH SOY INK

ORIGINAL-RETURN TO GENERATOR

Figure 2-8. Example Chemical Disposal/Recycle Request Form



1 Figure 2-8. Example Chemical Disposal/Recycle Request Form (Reverse)

2

Chemical Disposal/Recycle Request (CDRR) Instructions

General Instructions:

- Type or print neatly, fill out ALL blanks correctly and completely.
- Do not write in shaded areas. These are for WM&EC use only.
- A work package number needs to be included for all 1831 (private) waste and as requested for other special cases (e.g., compressed gas cylinders, lecture bottles, etc.).
- Do not fill in an accumulation date if the waste is in a satellite accumulation area.
- Do not include both satellite accumulation wastes and, 90 day wastes on the same CDRR form. Use separate forms.
- *Do not include both 1830 and 1831 wastes on the same CDRR form.*
- Do not include both nonradioactive chemical wastes and radioactive mixed waste on the same CDRR form.
- Do not include both 300 and 3000 Areas wastes on the same CDRR form.
- *For any materials analyzed, please attach a copy of the analytical report.*
- Please feel free to use several lines per item as necessary to include any important information on the material.

Specific CDRR Instructions:

(a) Provide a complete description of the material for disposal. For trade name items, attach a material safety data sheet (MSDS). For items analyzed, attach a copy of the analysis. Also include any additional information on material or process if any (e.g., CAS number, RTEC number.)

(b) Provide all known chemical components; use proper accepted names (e.g., ethyl acohol is acceptable; abbreviations or formulas are not).

(c) Enter weight percent for all known chemical components; this must add up to 100% for each item, unless the information is proprietary (as indicated on an attached MSDS). Trace amounts of metals, cyanides, sulfides, PCBs, phenolics, and other *highly toxic materials must be specified.*

(d) Please indicate physical state of material: S=Solid, L=Liquid, G=Gas.

(e) Please enter hazards from codes shown below; also, for corrosive material include the pH, for flammable materials include the flashpoint (FP).

Hazard Codes

C=Corrosive	T=Toxic	E=Explosive
EP= EP Toxic	O=Oxidizer	F=Flammable
R=Reactive (with water or air)		

(f) Please enter container/material from codes shown below (state all that apply):

F= Full	MT=empty	TR= triple rinsed	O= old
N= new (unused material)		S= spill material	PF= partially full

R= recyclable condition (unopened, or opened but in excellent condition)

Requirements for Material Pickup by WM&EC:

In order to facilitate material pickup by WM&EC, please do the following:

- Complete ALL required information on the CDRR form.
- Ensure that all materials are in screw-cap glass, metal, or plastic containers that are compatible with the waste (sealed containers which the material originally came in are acceptable, (e.g., glass ampules or metal paint cans). Ground glass, rubber stoppers, or taped seals will not be accepted.
- Have a chemical waste certification filled out and signed by a PNL Radiation Protection Technologist showing that the material has been surveyed and released (1 to 2 days prior to scheduled pickup).
- Each individual container must have marking or labeling on them that clearly identify 100% of their contents and their chemical hazards (if container is too small to label with all constituents please attach a tag or other listing).
- If you have questions, please refer to PNL-MA-8, "Waste management and Environmental Compliance". For hazardous waste issues and PNL-MA-43, "Health and Safety Management," for chemical hazard labeling requirements.

The waste is then inspected at the generating unit by the Waste Management Section to verify the information contained on the request form, such as number, sizes, and types of containers, location of waste, etc., and to check for proper containerization of waste. If discrepancies are noted during the inspection, the waste will not be picked up by the Waste Management Section. Typical discrepancies include waste not as described on request form or lack of supporting data to verify waste characteristics. In such cases, deficiencies will be explained to the generating unit responsible person, who will then be responsible for correcting them.

If the waste is found to be acceptable for transport, Waste Management staff will check to ensure required labels are in place, and transport (or arrange for transport of) the waste to 305-B Storage Facility. If transport will be over public roadways or highways, a Uniform Hazardous Waste Manifest will be prepared identifying PNNL as the transporter and 305-B Storage Facility as the receiving TSD unit. A copy of all such manifests is returned to the generating unit within 30 days of receipt at 305-B Storage Facility. A copy of the manifest is also retained at 305-B Storage Facility.

2.8.2 Response to Significant Discrepancies [B-8b]

Waste shipments received at the 305-B Storage Facility containing manifest discrepancies are not accepted unless the discrepancy or discrepancies can be resolved with the generating unit at the time the shipment is received. Manifest discrepancies requiring such resolution include:

- Variations exceeding 10% in weight for bulk shipments such as tank trucks or tank cars (generally not applicable to 305-B Storage Facility since most shipments are in drums or other containers);
- Any inaccuracy in piece counts in containerized shipments (underages or overages);
- Type mismatches (i.e., the waste is not as described on the request form; obvious inaccuracies such as waste acid substituted for waste solvent).

Manifest information will also be considered incorrect if the written description of wastes does not agree with visual observations, or if observed weights or volumes differ by more than 10 % from those described on the manifest.

If a discrepancy is noted, the generating unit will be contacted immediately. The waste will not be accepted for storage until the discrepancy is resolved. The generating unit will be asked to identify the source of the discrepancy (e.g., error in estimating volume or weight, incorrect identification of waste, etc.) Once the cause of the discrepancy is identified, and the generating unit and the waste management organization have concurred as to resolution of the discrepancy, the manifest will be corrected. Corrections will be made by drawing a single line through the incorrect entry and entering the correct information. Corrected entries will be initialed and dated by the individual making the correction. Once the manifest has been corrected, the discrepancy will be considered resolved.

Certain manifest discrepancies may be discovered after receipt, such as analytical data indicating incorrect designation, which may result in incorrect naming of the shipment on the manifest. Such discrepancies will be managed as noted above; if, however, the discrepancy cannot be resolved within 15 days of receipt of the shipment, the 305-B Storage Facility will file the report required by WAC 173-303-370(4)(b) as described in Section 12.4.1.1.1.

2.8.3 Provisions for Nonacceptance of Shipment [B-8c]

Provisions for nonacceptance of shipments are discussed in the following sections.

2.8.3.1 Nonacceptance of Undamaged Shipment [B-8c(1)].

As described in Section 2.8.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also transported to 305-B Storage Facility by waste management organization staff. This procedure is designed to prevent receipt of nonacceptable wastes. Waste management organization staff will refuse to accept or transport wastes, which are nonacceptable at 305-B Storage Facility.

2.8.3.2 Activation of BEP/Contingency Plan for Damaged Shipment [B-8c(2)].

As described in Section 2.8.1, all wastes are inspected by staff from the waste management organization prior to shipment and are also primarily transported to 305-B Storage Facility by waste management organization staff. Damaged containers will not be accepted from the generator and will not be transported. The only opportunity for receipt of damaged containers, therefore, would be if containers were damaged during transportation. If a shipment of waste is damaged during transportation and arrives in a condition as to present a hazard to public health or to the environment, the facility BEP/contingency plan will be implemented as described in Chapter 7.0.

2.8.4 Unmanifested Waste

Waste generated within the Hanford Site is not transported over public highways and is not subject to manifest requirements under WAC 173-303. Such waste may be received at the 305-B Storage Facility without a manifest. However, all wastes (including unmanifested waste) must be accompanied by a completed and approved CDRR form (Figure 2-8).

If transport is by public roadways or highways, a manifest must be used as noted in Section 2.8.1. Shipments requiring a manifest and not having one will either be rejected or, at the sole discretion of the unit operator, the unit will accept the waste and file an unmanifested waste report as described in WAC 173-303-390(1) and detailed in Section 12.4.1.1.2.

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6.0 PROCEDURES TO PREVENT HAZARDS [F]

The 305-B Storage Facility is operated to minimize exposure of the general public and operating personnel to dangerous and mixed waste.

6.1 SECURITY [F-1]

Security for 305-B Storage Facility is provided by a combination of the overall security system for the 300 Area, and a specific security system for the waste storage unit. The former controls access to the 300 Area proper, while the latter controls access to 305-B Storage Facility.

The 305-B Storage Facility is located within the Hanford 300 Area. As part of the Hanford Site, the 300 Area is subject to a restricted access and personnel security system for the protection of Government property, classified information, and special nuclear materials. The 300 Area is a controlled access area with access limited to persons authorized to enter and having appropriate security clearances or escorts.

The security program for 305-B Storage Facility, in addition to 300 Area access, is designed to limit building access to those personnel within the 300 Area authorized to enter the unit. Access to 305-B Storage Facility can be gained through five walk-in doors, and two large roll up doors that facilitate loading and unloading activities. All doors to 305-B Storage Facility are kept locked at all times except when in use. All requests for keys are reviewed and approved by the unit operating supervisor and the building manager, and a record of the personnel issued keys is kept in the Operating Record at all times.

Keys to the unit are issued only to unit personnel, security personnel, and emergency response personnel. The unit-operating supervisor approves any additions to this list, and the building. Specific aspects of the security programs for both the 300 Area and 305-B Storage Facility are described in more detail below.

6.1.1 Security Procedures and Equipment [F-1a]

The following sections describe the 24-hour surveillance system, barrier, and warning signs used to provide security and control access to the 305-B Storage Facility.

6.1.1.1 24-Hour Surveillance System [F-1a(1)]

The 305-B Storage Facility does not maintain a 24-hour surveillance system. Entrances to the building are kept locked except when the building is in use to prevent unauthorized access. Normal working hours for the unit is 8:00 A.M. to 4:30 P.M. Monday through Friday except holidays. The Hanford Patrol maintains frequent drive-by surveillance of the 300 Area buildings, including 305-B Storage Facility, on a 24-hour basis to ensure that no unauthorized access to the area has occurred.

An 8-ft chain link fence topped with three strands of barbed wire surrounds the entire 300 Area. There is no separate fence surrounding the 305-B Storage Facility. All waste management activities, however, are conducted within the unit. The facility itself, therefore, provides a barrier completely surrounding the active waste management operations.

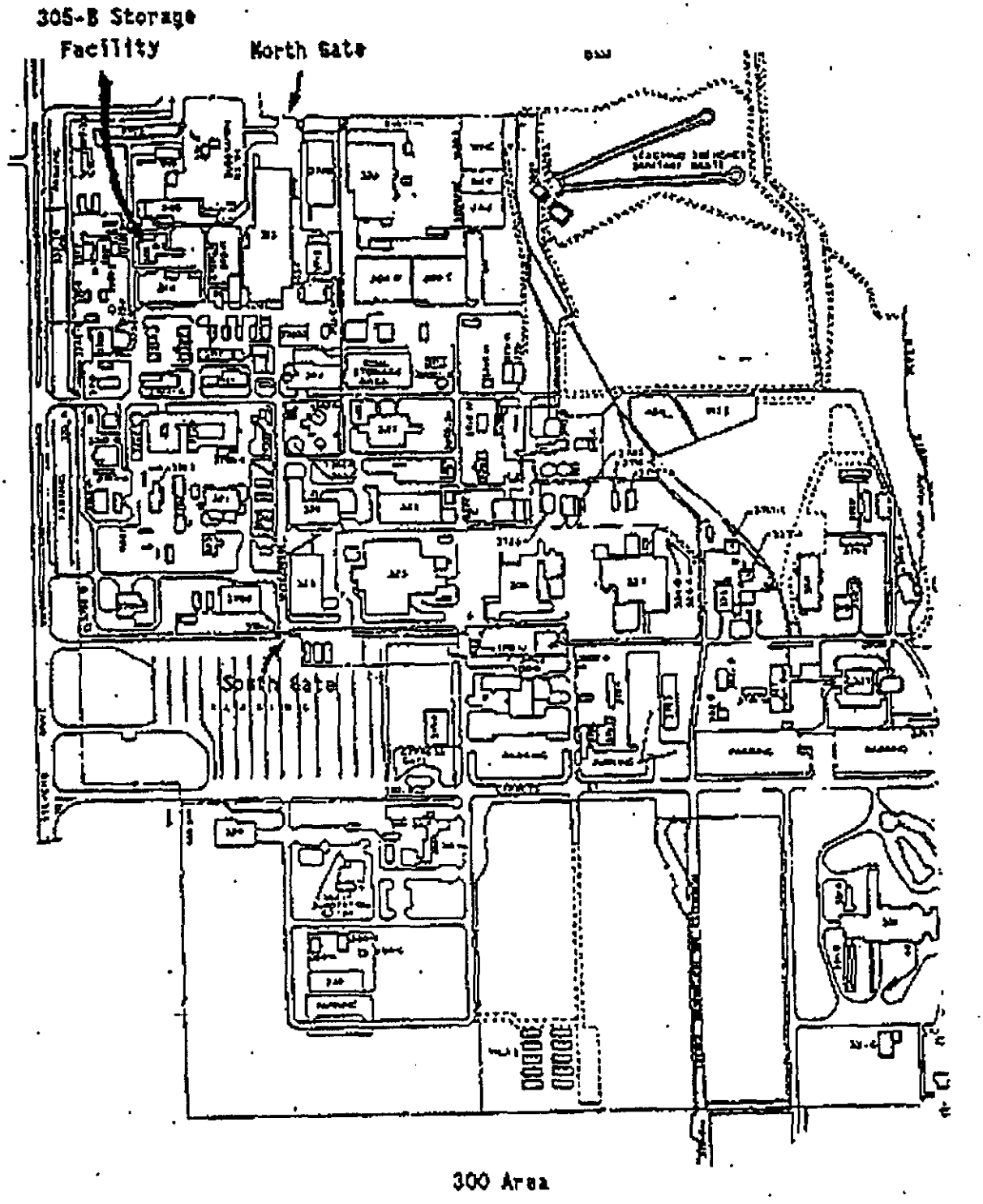


Figure 6-1. Normal Site Access - Entrance at the Southern End of Wisconsin Avenue and the North End of the 300 Area Barrier and Means to Control Entry [F-1a(2)(a), (2)(b)]

Entry to the unit is controlled through the use of locked entrances. The 305-B Storage Facility is kept locked at all times except when in use. Physical control of keys and records of key distributions are maintained by PNNL Security. Distribution of keys to 305-B Storage Facility is subject to approval by the building manager, and the facility-operating supervisor, and a list of those personnel in possession of keys are kept in the Operating Record for 305-B Storage Facility. Personnel in possession of keys have been instructed to admit only persons having official business. 305-B Storage Facility staff must escort all untrained visitors (personnel without 24/40-hour hazawoper training) in the waste storage areas.

6.1.1.2 Warning Signs [F-1a(3)]

The 305-B Storage Facility is posted with "DANGER - UNAUTHORIZED PERSONNEL KEEP OUT" and "305-B CHEMICAL WASTE STORAGE BUILDING" signs near each entrance on all sides of the unit. The signs are clearly visible from the required distance of 25 feet.

6.1.2 Waiver [F-1b(1), (2)]

Waivers of the security procedures and equipment requirements for 305-B Storage Facility are not required and will not be requested.

6.2 INSPECTION SCHEDULE [F-2]

The purpose and intent of implementing inspection procedures at 305-B Storage Facility are to prevent malfunctions, deterioration, operator errors, and/or discharges that may cause or lead to the release of regulated waste to the environment or threats to human health. A system of daily, weekly, monthly, quarterly, once every four months, and annual inspections involving various PNNL departments and levels of management are implemented at 305-B Storage Facility.

6.2.1 General Inspection Requirements [F-2a]

The content and frequency of inspections performed at 305-B Storage Facility are described in this section. Also, described is maintenance of inspection records.

6.2.1.1 Types of Problems [F-2a(1)]

Daily, weekly, monthly, quarterly, once every four months, and annual inspections are performed at 305-B Storage Facility. The types of problems addressed by each of these inspections are described below.

Daily Inspections. The 305-B Storage Facility is inspected daily whenever waste packaging, transfer, shipping, or movement operations are being carried out. Daily inspections monitor container condition and integrity, the building waste containment system, and other building areas where waste are handled. Specific inspection points include:

- Inspection of stored containers for leaks or damage
- Mislabeled or opened containers
- Improper storage (e.g., incompatible waste storage)
- Disorderliness or uncleanliness of a storage unit
- Check for accumulation of waste in containment systems.

Results of these daily inspections are recorded in the daily operating logbook that is part of the permanent 305-B Storage Facility Operating Record.

Weekly Inspections. Waste management organization personnel conduct weekly inspections of both safety and operating equipment in 305-B Storage Facility. Safety and emergency equipment are inspected for functionality and adequacy of supply. Two personnel on the last workday of each week using the inspection Logbook and the most current version of the Weekly Inspection Checklist Form that is on file at 305-B Storage Facility conduct the weekly inspection. An example of a Weekly Inspection Checklist is shown in Figure 6-2. The Inspection Checklist and Inspection Logbook become a permanent part of the 305-B Storage Facility Operating Record.

Specific problems to be looked for with each of the items inspected are identified on the Inspection Checklist Form. The use of this form enhances inspection effectiveness by providing a consistent and detailed listing of areas of potential problems and those safeguards in place to prevent them. There is space provided on the form for the inventory summary, comments, required remedial actions (if any), as well as the date such actions are accomplished. The inspector is required to sign and date the inspection checklist after performing the inspection. In addition, a space is provided for the dated signature of the co-inspector. A copy of the completed inspection form with any assigned action items is distributed to the responsible operating personnel. All corrective actions required must be completed within one week of the inspection, which found them deficient, unless there are documentation and reason for further delay. When corrective action has been completed, the responsible personnel date and initial the form.

Monthly Inspections. The manager of the Environmental Management Services Department or their designee conducts monthly oversight inspections. This monthly inspection is conducted on or near the last workday of each month using the most current version of the Monthly Inspection Checklist Form. An example of a Monthly Inspection Form is shown in (Figure 6-3). Items targeted for monthly inspection include, but are not limited to, equipment function and condition, housekeeping, chemical inventory, weekly inspections and corresponding corrective actions, safety equipment operation, spill control and cleanup supplies, and general packaging material inventory. Specific problems to be looked for with each of the items inspected are identified on the Inspection Checklist Form. Copies of the inspection report memorandum are provided to operations personnel and maintained in the files of the waste management organization. Any corrective action noted on the management inspection checklist or deterioration or malfunctions in equipment discovered by the inspector are delegated to responsible individuals in the operations group. Corrective actions identified in the monthly management inspection must be completed before the next inspection cycle unless there are documentation and reason for further delay. Monthly management inspection reports memos and corrective action response documentation is part of the 305-B Storage Facility Operating Record.

Quarterly, Once Every Four Months, and Annual Inspections. In addition to the several layers of management inspection of 305-B Storage Facility, safety inspections are performed to assure the fire protection system, eye wash/shower unit, and walk-in hood ventilation systems are in working order. The Hanford 300 Area Fire Department performs "once every four months" a inspection of fire suppressant and notification systems (i.e., sprinkler system and pull boxes). This inspection includes flow tests of the sprinklers to assure no blockage in the system lines as well as activation of the alarm system to assure proper operation of pull boxes. On an annual basis, the Fire Department performs a full inspection of the sprinkler system, heat detectors, and pull boxes. A complete flow test is performed from the furthest valve to assure flow through.

Figure 6-2. Example of Weekly Inspection Checklist Form

Weekly Inspection Form

305-B Storage Facility Chemical Waste Storage

Inspector Name (print): _____ Inspector Signature: _____ Time/Date: _____

Co-Inspector Name (print): _____ Co-Inspector Signature: _____ Time/Date: _____

Waste Containment Locations (Y=Yes, N=No)

Earliest PCB Accumulation Date in Cell 2: _____ **Earliest RMW PCB Accumulation Date:** _____

Cell:	1 Oxidizer Acids	2 Poisons, PCB, Class 9	3 Caustic WSDW Non-Reg	4 Flammable, Combustible, Aerosols	5 Flammable Bulking Cylinders	6 Asbestos	7 Non-Flammable RMW	8 Flammable Drum Storage	9 Flammable RMW	10 Non-Reg Yard	11 WSDW, Class 8 Non-Reg. Drums	12 Oxidizer Drums	13 Acid Drums	14 Alkaline Drums	15 Explosives Magazine
Container integrity good?															
Containers properly sealed?															
Containers properly labeled?															
Containers properly segregated?															
floor free of major cracks/gaps?															
sumps empty and dry?															

Minimum aisle space present? _____ (44" leading to building exits, 36" all other aisles per NFPA 101, UBS 3315(b)1 and WAC 173-303

Inventory below 30, 000 gallon design capacity? _____ Estimated Volume = _____ gallons

Inventory below UBC Class B limits? _____ (<480 gallons 1-A, 1-B, 1-C total and/or <240 gallons 1B

daily inspections logged? _____

Figure 6-2. Example of Weekly Inspection Checklist Form (cont.)

Weekly Inspection Form
305-B Storage Facility Chemical Waste Storage

Emergency Equipment and Supplies (Y=Yes, N=No)			
North eyewash safety shower: clear access?	____	Inventory as noted and in working order?	____
South eyewash safety shower: clear access?	____	4 each full face respirators with combination organic vapor/HEPA filters?	____
Portable eyewash outside of east bay door pressurized?	____	4 each full face shields?	____
Spill control station stocked for acid, base, solvent and other spills?	____	6 each Tyvek suits?	____
Fire extinguishers (8) inspected and have clear access?	____	6 each acid suits?	____
Facility phone (376-4293) operational?	____	20 pair eye protection, glasses and/or goggles?	____
Facility public address system (376-1885) operational?	____	synthetic, rubber, leather gloves stocked?	____
Formaldehyde spill kit (Cell 2) fully stocked with 11 lbs neutralizer?	____	3 each SCBA units?	____

Corrective Action and/or Clean-up Performed

Action	Date Corrected

the entire system. Fire extinguishers are also checked for proper pressure and function. Records of these fire inspections and the Hanford Fire Department keeps their results. Documentation of any required corrective actions is kept in the 305-B Storage Facility Operating Record.

PNNL facilities support staff perform additional documented inspections of the two emergency eye wash/shower units, and the walk-in hood airflow. The safety showers and airflow of the walk-in hood are inspected quarterly. The emergency eyewash/safety showers are checked for proper operation, and the walk-in hood ventilation face velocity must meet a 125-fpm minimum requirement. Records of these safety equipment inspections and their results, as well as documentation of any required corrective actions, are maintained by the preventive maintenance staff in PNNL's Facilities Management Department and Technical Services Department.

6.2.1.2 Frequency of Inspections [F-2a(2)]

Inspections are conducted on a daily, weekly, monthly, quarterly, and annual basis, as described in Section 6.2.1.1.

The frequency of inspections is based on specific regulatory requirements and on the rate of possible deterioration of equipment and probability of environmental or human health incidents.

Areas where dangerous and mixed waste are actively handled, including the high bay area, storage cells, and flammable liquid bulking module, are considered to be areas subject to spills. These areas are given daily inspections when in use, as required by WAC 173-303-320(2)(c).

The containment system (i.e., floors and sumps) is inspected daily when in use for accumulation of spilled material. The containment system itself is inspected weekly for structural integrity, (i.e., no cracks, gaps, leaks, etc. that could result in environmental release of waste in the event of a spill). This frequency is based on the need to perform timely corrective actions in the event that problems are noted.

Aisle space between containers is inspected weekly. This frequency is based on the consideration of the rate of container transfers and movement within 305-B Storage Facility. Weekly inspections will allow container spacing problems to be identified and corrected before they become major problems.

Emergency and safety equipment and personal protective equipment is inspected weekly. This frequency is based on consideration of the expected rate of use of this equipment. Use of emergency equipment should not occur more than once during any one-week period. Weekly inspections will assure that this equipment is always functional and available in adequate supply.

6.2.2 Specific Process Inspection Requirements [F-2b]

The following sections detail the inspections to be performed at the 305-B Storage Facility.

6.2.2.1 Container Inspection [F-2b(1)]

When in use, dangerous and mixed waste storage areas, as well as containers stored at 305-B Storage Facility is inspected daily for leakage, evidence of damage or deterioration, proper and legible labeling, and proper lid and bung closure. When work is being performed, the containment system is also checked on a daily basis for accumulation of any waste that may have been spilled into them. Structural integrity of the containment systems is checked on a weekly basis.

Figure 6-3. Example of Monthly Inspection Checklist Form

305-B Storage Facility Monthly Management Inspection Checklist

Date/Time _____ Inspector (Print/Sign) _____

	Check if Working/ Present	Comments*
Check for present and working condition:		
Lights		
Exhaust fans (2 in highbay)		
Eye wash/showers (3)		
Fire extinguishers		
Required facility postings		
Check housekeeping:		
Inside		
Outside		
Aisles/walkway clear		
Sumps dry		
Check waste storage:		
Weekly inspection conducted/filed?		
Facility crowded?		
Container condition		
Proper segregation		
Check supply and condition of safety equipment:		
Gloves - leather and disposable		
Goggles		
Face shields		
Coverall/lab coats		
Masks and cartridges		
Check spill control and cleanup supplies:		
Spill pillows – general		
Neutralizers		
Mercury		
Solvent		
Check packaging material:		
Drums - 5 gallon		
Drums - 30 gallon		
Drums - 55 gallon		
Absorbent - oil dry		
Absorbent – vermiculite		
Labels		
Marking supplies: pens/spray paint		

*Corrective actions are required within the next inspection cycle.

Daily and weekly inspections are performed and documented in accordance with Section 6.2.1.1. Specific inspection items are enumerated in Section 6.2.1.1 in association with the inspection description and frequency. Response to problems, and documentation of corrective actions are as described in Section 6.2.1.1.

6.2.2.2 Tank Inspection [F-2b(2)]

This section does not apply to the 305-B Storage Facility because waste are not stored or treated in tanks.

6.2.2.3 Waste Pile Inspection [F-2b(3)]

This section does not apply to the 305-B Storage Facility because waste is not placed in waste piles.

6.2.2.4 Surface Impoundment Inspection [F-2b(4)]

This section does not apply to the 305-B Storage Facility because waste is not placed in surface impoundments.

6.2.2.5 Incinerator Inspection [F-2b(5)]

This section does not apply to the 305-B Storage Facility because waste is not incinerated.

6.2.2.6 Landfill Inspection [F-2b(6)]

This section does not apply to the 305-B Storage Facility because waste is not placed in landfills.

6.2.2.7 Land Treatment Facility Inspection [F-2b(7)]

This section does not apply to the 305-B Storage Facility because waste is not treated in land treatment units.

6.3 WAIVER OR DOCUMENTATION OF PREPAREDNESS AND PREVENTION REQUIREMENTS [F-3]

The following documents the preparedness and prevention measures taken at the 305-B Storage Facility.

6.3.1 Equipment Requirements [F-3a]

The following sections describe the internal and external communications and emergency equipment in use at 305-B Storage Facility.

6.3.1.1 Internal Communications [F-3a(1)]

Internal communication systems are used to provide immediate emergency instruction to personnel in 305-B Storage Facility. Internal communications address general emergencies that may occur in the 300 Area as well as specific emergencies that may occur in 305-B Storage Facility.

Because of the nature of activities that occur in the 300 Area, the potential exists for emergencies outside of 305-B Storage Facility (e.g., release of radioactive materials) that could impact operations and staff in 305-B Storage Facility. For this reason, the general emergency signals for the 300 Area are applicable to 305-B Storage Facility. These signals are summarized in Table 6-1. Fire alarm signals are located in each building throughout the 300 Area. The nearest emergency siren for "area evacuation" and "take cover" is located 300 yards southeast of 305-B Storage Facility, on top of the 326 Building, and is

audible in all parts of 305-B Storage Facility. Because fissile materials are not handled in 305-B Storage Facility, there is no criticality alarm for the unit.

Internal communications to provide emergency instruction in the event of an emergency in 305-B Storage Facility are fire alarms, public address (PA) system, and telephones. The fire alarms are to be used to provide notification for immediate evacuation of 305-B Storage Facility. Fire alarm pull boxes are located at all exits of the facility such that operating personnel have immediate access to one in all portions of 305-B Storage Facility. Four-fire alarm bells are located within the 305-B Storage Facility and are audible at all locations within the building. The locations of the fire alarm bells are shown in Figure 6-4 and are as follows: (1) an office wing on the northeast hall; (2) an office wing next to the east entrance; (3) on the south wall of the basement; and (4) on the northeast wall of the high bay. The PA system is to be used for building-wide broadcasting of verbal emergency instructions to 305-B Storage Facility staff. The PA system can be accessed from any unit telephone by dialing 376-1885. The PA system speakers are located in the high bay, in the basement, and in the office wing of 305-B Storage Facility.

The telephone system is to be used to provide verbal emergency instructions to 305-B Storage Facility staff. The telephone can also be used to verbally transmit emergency data to non-305-B Storage Facility staff, and to request emergency services. A network of telephones covers both floors of the facility. Locations of telephones are shown in Figure 6-4.

Table 6-1. Emergency Signals and Responses

Signal	Meaning	Response
Gong	Fire	Evacuate building. Move upwind. Keep clear of emergency vehicles.
Siren - steady 3-5 minute blast	Area Evacuation	Proceed promptly to north parking area. Stand by to follow instructions from emergency director.
Wavering Siren	Take Cover	Close up the 305-B Building, turn off all intake ventilation and go to the 314 Building south of the facility. Contact Laboratory Safety (337 Building) with your whereabouts. If this cannot be accomplished, stay in the 305-B Building until notified that it is safe to leave
Howler (Aa-oo-gah)	Criticality	Run immediately at least 100 yards away from the signal and take cover. Personnel inside the 305-B Building should follow the "take cover" procedure and wait for further instructions.
ALL EMERGENCY SIGNALS CAN BE HEARD BY PHONING 373-2345		

6.3.1.2 External Communications [F-3a(2)]

As mentioned in Section 6.3.1.1 above, both a fire alarm system and telephone network system are in place at 305-B Storage Facility. Both systems can be used to summon emergency assistance. The fire alarm system summons direct response from the Hanford Fire Department's 300 Area Station. The telephone system can be used to access Hanford's Emergency Network directly at 375-2400 or by dialing the emergency number, 911. Locations of fire alarm pull boxes and telephones are given in Figure 6-4.

6.3.1.3 Emergency Equipment [F-3a(3)]

Emergency equipment available for trained 305-B Storage Facility personnel includes portable fire extinguishers, a fire suppression system, spill response equipment, and decontamination equipment.

Seven portable 10-lb ABC fire extinguishers, and one 15-lb (or larger) Class D fire extinguisher for combustible metals, are available at various locations throughout 305-B Storage Facility, as shown in Figure 6-4. The 10-lb ABC extinguishers are located: (1) next to the east entrance; (2) northwest end of the basement; (3) southwest end of the high bay; (4) outside of the bulking module door; (5) north of Cell No. 4 entrance; and (6) north-west end of high bay. (7) office area. A 15-lb ABC extinguisher is located outside cell 7. The 15-lb (or larger) class D extinguisher is located on the exterior of the organics cell wall north of the entrance.

The facility is also equipped with an automatic fire suppression system consisting of galvanized steel, schedule 40 per ASTM A120 pipe and 150-lb malleable iron per ANSI B16.3 fittings. All components are UL-listed or FM-approved, and installation of the fire sprinkler system has been conducted in accordance with NFPA 13 for ordinary hazard. Spill cleanup supplies and equipment maintained are summarized in Table 6-2. Four emergency eye wash/showers are available for emergency personnel decontamination. The locations of the emergency eye wash/showers are shown in Figure 6-4. If needed, the Hanford Fire Department can provide additional emergency equipment. Emergency equipment available through the Hanford Fire Department for hazardous materials response is identified in Appendix 6A.

6.3.1.4 Water for Fire Control [F-3a(4)]

The large diameter linen that services 305-B Storage Facility for potable use and fire protection supplies adequate water volume and pressure. Three fire hydrants are located in immediate proximity to serve the 305-B Storage Facility: (1) 80 ft directly north of the northwest corner of 305-B Storage Facility; (2) 40 ft directly south of the southwest corner of 305-B Storage Facility; and (3) 60 feet directly east of the southeast corner of 305-B Storage Facility. In addition, the Hanford Fire Department's 300 Area Station is located within 0.25 mile of 305-B Storage Facility.

6.3.2 Aisle Space Requirements [F-3b]

Containers stored in the 305-B Storage Facility are placed to provide aisle space clearance in accordance with WAC 173-303-340(3) and applicable standards of the Uniform Building Code and Life Safety Code. The proper maintenance of aisle space is inspected weekly and noted on the weekly inspection checklist (Figure 6-2).

6.4 PREVENTIVE PROCEDURES, STRUCTURES, AND EQUIPMENT [F-4]

The following sections describe preventive procedures, structures, and equipment.

6.4.1 Unloading Operations [F-4a]

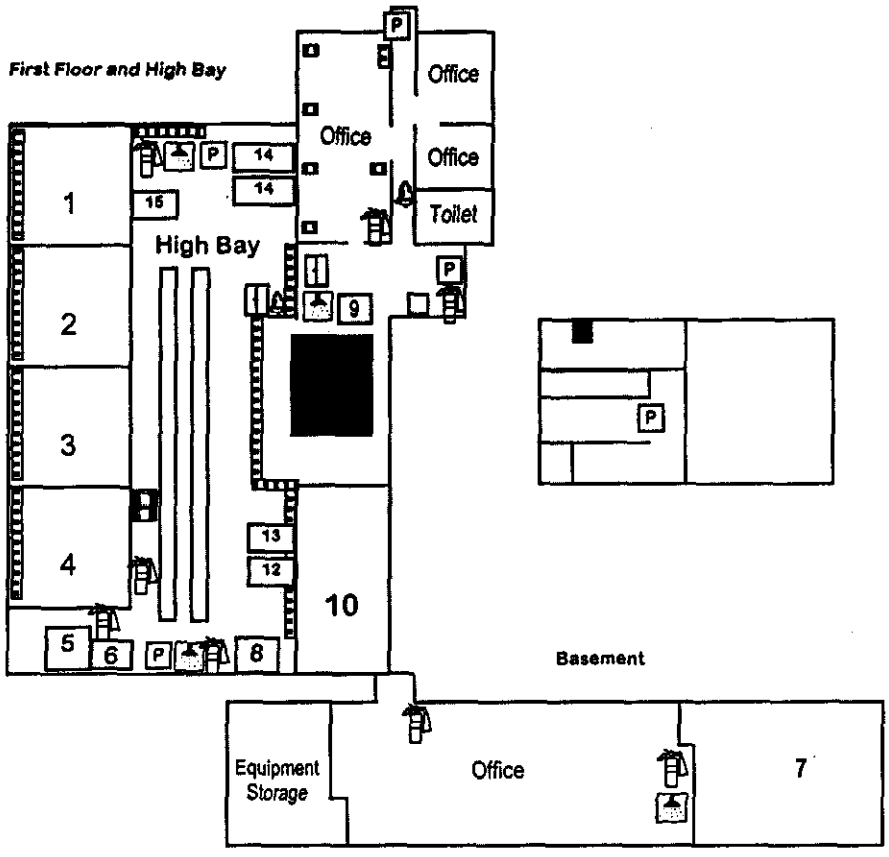
Procedures have been developed at 305-B Storage Facility to prevent hazards and minimize the potential for breakage, punctures, or the accidental opening of containers during waste unloading. All waste unloading is performed inside the 305-B Storage Facility. The large bay door is opened and the appropriate transporting vehicle (usually a pickup truck) is driven inside. As described in Section 4.1.1.3, the unloading area has secondary containment. By unloading all waste inside the fully contained facility, spills during unloading operations will be contained. Procedures for unloading and transferring waste to storage areas have been designed to minimize hazards. All waste is inspected prior to shipment to 305-B Storage Facility to ensure that they are in appropriate containers and that the containers are in good condition. Inspection of containers prior to acceptance at 305-B Storage Facility minimizes the potential for spills during unloading operations. The potential for spills during waste handling is minimized through the use of appropriate container handling equipment. Large waste items such as drums of nonflammable RMW are lowered into the basement of the facility for storage using an overhead crane or winch assembly. The containers are immediately transported, via a hand lift, into the

concrete lined storage vault. Forklifts may also be used to unload heavy waste items. Small waste items can be unloaded by hand. Each small waste item is removed from the secondary containment unit in which it was transported (i.e., plastic storage tub) and placed in the appropriate storage location.

Table 6-2. Material and Equipment for Spill Containment and Cleanup

Materials/Equipment			Notes
Diatomaceous Earth	30-gallon drum	To absorb small spills of oils, solvents, aqueous materials. Not used for acids or caustics unless first neutralized.	Stored in high bay of 305-B Storage Facility.
Vermiculite	55-gallon drum	To absorb small spills of oils, solvents, aqueous materials. Not used for acids or caustics unless first neutralized.	Stored in high bay of 305-B Storage Facility.
Absorbent Pillows or Booms	Three cartons, each containing booms or 12 pillows	To be used for diking or damming and absorption of spilled materials	Each boom or pillow can absorb slightly more than 1 L of liquid.
Acid- and base-specific and solvent absorbents or neutralizers	50-lb box of each in 305-B Storage Facility, and a 32-oz bottle of each in transport vehicle.	Neutralization of known chemical spills.	J.T. Baker™ brand or equivalent.
Citric Acid	30-gallon drum	Neutralization of alkaline spills	Stored in high bay of 305-B Storage Facility.
Sodium Bicarbonate	30-gallon drum	Neutralization of acid spills.	Stored in high bay of 305-B Storage Facility.

Figure 6-4. 305-B Storage Facility Building Plan and Location of Emergency Equipment



Legend

1. Acids, Oxidizers
2. Poisons, Class 9
3. Alkaline, WSDW, Organic Peroxides
4. Organics and Compressed Aerosols
5. Flammable Liquid Bulking and compressed gases
6. Asbestos Cabinet
7. RMW Storage Cell
8. Flammable Storage
9. Small Quantity Flammable RMW
10. Outdoor Non-regulated Drum Storage
11. WSDW Non-flammable Drums
12. Oxidizer Drums
13. Acid Drums
14. Alkaline Drums
15. Explosive Magazine

Safety Shower/Eyewash

Phone

Fire Alarm Bell

Fire Alarm Pull Box

10-Lb. ABC Fire Extinguisher

15 Lb. Or larger Class D Fire Extinguisher

Removable Access to Basement

Emergency Equipment Cabinet

Collection Sump

6.4.2 Run-Off [F-4b]

The 305-B Storage Facility was designed to eliminate the likelihood of off-site migration via run-off. Because the facility is completely enclosed (i.e., complete roof and no open walls), run-off of precipitation is not a factor. In addition, floors are bermed and sloped toward sumps in the loading/unloading area and each storage cell is similarly bermed, sloped, and individually sumped to eliminate the possibility of spills interacting or migrating offsite. The main high bay area and each storage cell are fully contained by at least a 6-in. high dike or ramp. Each door from the waste handling areas to the outside has a collection trench to intercept any potential run-off. The containment system for 305-B Storage Facility is described in more detail in Section 4.1.1.3.

6.4.3 Water Supplies [F-4c]

305-B Storage Facility is designed and operated to safely contain waste and prevent any contamination of water supplies. The containment system described in Section 4.1.1.3 prevents infiltration of waste that could contaminate groundwater and prevents run-off of waste that could contaminate surface water. The nearest water supply is the 300 Area water intake, which is located on the Columbia River 0.5 mile from 305-B Storage Facility.

6.4.4 Equipment and Power Failure [F-4d]

The 305-B Storage Facility does not have any systems that would cause release of dangerous waste or RMW during a power failure or equipment failure. Interruption of power to any of the systems utilizing electrical power (HVAC system, crane, forklift) merely causes the equipment to stop operating. The unit has an emergency lighting system that operates automatically during power failure incidents.

For actions to be taken in the event of power failure to unit systems or equipment refer to the unit BEP/Contingency Plan (Section 7).

6.4.5 Personnel Protection Equipment [F-4e]

Protective clothing and equipment are provided to employees during normal and emergency operations. During routine operations, the maximum number of employees working in the 305-B Storage Facility is less than fifteen. For dry chemical handling activities, such as labpacking, the minimum protection requirement is eye protection (safety glasses with side shields or chemical goggles), lab coat, and chemical resistant gloves (plastic or other construction as appropriate). Protection levels for other operations, such as bulking, and emergency situations are determined in consultation with a PNNL industrial hygienist, and staffing levels are revised according to the availability of proper protective equipment as shown below. Protective clothing and equipment available in the 305-B Storage Facility includes:

- 6 sets of chemically resistant suits, aprons, boots, and gloves
- 20 pairs of extra protective eyeglasses
- 3 SCBA
- 5 pairs of chemical goggles
- 4 face shields
- 4 full-face respirators with appropriate cartridges.

This protective equipment is stored in cabinets located outside of the operating area east entrance and is well stocked at all times. The location of the storage cabinets is given in Figure 6-4. This equipment is

periodically replaced as it is used. The above inventory reflects the quantities of each type of PPE that are typically present at 305-B Storage Facility. Minimum quantities required to be present are given in the weekly inspection checklist found in the Hazardous & Miscellaneous Waste Operations Procedure.

6.5 PREVENTION OF REACTION OF IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTE [F-5]

The following sections describe prevention of reaction of ignitable, reactive, and incompatible waste.

6.5.1 Precautions to Prevent Ignition or Reaction of Ignitable or Reactive Waste [F-5a]

305-B Storage Facility may be used to store a variety of ignitable waste. Precautions to prevent ignition of ignitable waste involve separation of waste from sources of ignition and use of procedures, which minimize the potential for accidental ignition. There are no routine sources of ignition or open flame in 305-B Storage Facility. Work with ignition or heat sources, if required, is limited and controlled by PNNL management and is performed in compliance with internal PNNL health and safety procedures for elimination of ignition sources. These internal procedures:

- Prohibit use of open flame equipment when working with flammable liquids
- Prohibit smoking around flammable liquids [No smoking is allowed at 305-B Storage Facility]
- Require electrical equipment used in flammable or explosive atmospheres to comply with the National Electrical Code, NFPA 70
- Require use of equipment with automatic, adjustable temperature controls and high-temperature limit switches to prevent overheating
- Prohibit placement of flammable liquids on hot surfaces
- Require all static electricity sources to be grounded in areas where ignitable vapors may be present
- Require bonding of conductive containers when transferring flammable liquids.
- Require use of non-sparking tools in flammable waste storage areas

All maintenance or modifications that require work with ignition sources must receive prior approval by a PNNL Safety Engineer. Smoking is not allowed in 305-B Storage Facility at any time and the interior and exterior of the facility are clearly posted with "No Smoking" signs. Waste storage areas are not heated by any radiant heat source. All tools used to open ignitable waste containers are constructed of nonsparking materials.

A PNNL fire safety engineer familiar with the Uniform Fire Code inspects ignitable waste storage areas annually. This inspection is documented in the Operating Record. There are also storage restrictions at 305-B Storage Facility for combustible waste as part of fire safety requirements. The storage restrictions defined in the Uniform Building Code for Class B Occupancy apply to 305-B Storage Facility (International Conference of Building Officials 1988). The weekly inspection for 305-B Storage Facility includes checking to see if the inventory of combustibles is below these limits. These inspections are documented in the Operating Record.

6.5.2 General Precautions for Handling Ignitable or Reactive Waste and Mixing of Incompatible Waste [F-5b]

As described in Section 6.5.1, ignitable waste are managed in a manner that protects the waste from sources of ignition or open flame. Ignitable waste containers are maintained in good condition and inspected weekly to minimize the potential for releases that could result in fire. Containers of ignitable

waste are protected from high temperature to prevent the potential for pressurization and buildup of ignitable vapors. Containers of ignitable waste are stored in flammable material storage cabinets within waste storage cells, as described in Section 4.1.1.6. Limitations on sizes of containers and amounts of storage in cabinets are found in Section 4.3.1.

Because of the wide variety of waste that may be accepted at 305-B Storage Facility, the potential exists for storage of incompatible waste. Mixing of incompatible waste is prevented through waste segregation and storage procedures. Chemical waste stored in 305-B Storage Facility are separated by compatibility and hazard class and stored in separate storage cells. Separate storage shelves and cabinets are used within the storage cells, as described in Section 4.1.1.6, to provide further waste segregation. The following general guidance is used to segregate and separate chemicals:

- Store acids on a low storage shelf or in acid storage cabinets.
- Separate acids from bases and alkaline metals such as potassium or sodium
- Separate oxidizing acids from organic acids and flammable or combustible materials
- Store bases away from acids and store solutions of inorganic hydroxides in polyethylene containers
- Store oxidizers away from flammable or combustible materials and reducing agents such as zinc, alkaline metals, and formic acid
- Store peroxide-forming chemicals in airtight containers in a dark, cool, and dry place (inside of cabinets)
- Store flammable materials in approved containers or cabinets
- Separate flammable materials from oxidizing acids and oxidizers and keep them away from sources of ignition
- Clearly mark cabinets to identify the hazards associated with their contents.
- The potential for waste ignition or reaction at 305-B Storage Facility is also minimized through storage restrictions on hazardous material quantities. The storage restrictions defined in the Uniform Building Code for Class B Occupancy apply to 305-B Storage Facility (International Conference of Building Officials 1988). The weekly inspection of 305-B Storage Facility includes checking to see if waste inventories are below these limits. These inspections are documented in the Operating Record.

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10.2 THE 305-B STORAGE FACILITY WASTE MINIMIZATION OBJECTIVES 10-1
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10.0 WASTE MINIMIZATION PLAN

This chapter discusses the program to minimize the volume or quantity and toxicity of waste generated at the 305-B Storage Facility. The regulatory basis for, and objectives of, the waste minimization program are discussed. Waste generators are described and procedures for minimizing waste are discussed.

10.1 REGULATORY BASIS

The Hazardous and Solid Waste Amendments of 1984 to RCRA require that, whenever feasible, the generation of regulated hazardous waste be reduced or eliminated as expeditiously as possible. Section 3002(b) of RCRA requires certification of the following:

- The generator of the hazardous waste has in place a program to reduce the volume or quantity and toxicity of such waste to the degree determined by the generator to be economically practicable
- The proposed method of treatment, storage, and/or disposal is that practicable method currently available to the generator that minimizes the present and future threat to human health and the environment.

In addition, WAC 173-303-283(3)(h) requires each facility to prevent the use of processes that do not treat, detoxify, recycle, reclaim, and recover waste material to the extent economically feasible. This chapter provides the means to certify that a waste minimization program is in place for the 305-B Storage Facility.

10.2 THE 305-B STORAGE FACILITY WASTE MINIMIZATION OBJECTIVES

The 305-B Storage Facility waste minimization program is tied to the overall waste minimization program for the Hanford Site. The 305-B Storage Facility waste minimization program includes all practices that reduce, avoid, or eliminate dangerous waste generation.

The 305-B Storage Facility waste minimization program objectives are to:

- Minimize the volume of dangerous waste generated.
- Recover laboratory chemicals for redistribution and/or for reuse if practicable.
- To the extent that dangerous waste is generated, select management options that recycle, reclaim or reuse the waste for a beneficial purpose to the maximum extent feasible.
- Segregate dangerous waste from nondangerous waste if practicable.

Annually, a certification as required by 40 CFR 264.73(b)(9) will be placed in the unit Operating Record stating that a waste minimization program is in place. In addition, a Hanford Site-wide biennial report is made to the EPA containing a description of efforts made to minimize waste and certification that a waste minimization program is in place. The report will include information on the 305-B Storage Facility waste minimization program.

10.3 WASTE GENERATION CONTROL

As noted above, the 305-B Storage Facility is a storage unit receiving waste generated at other locations on the Hanford Site (principally the 300 Area) until the waste can be transported to a permitted offsite recycler or treatment, storage and/or disposal facility. The 305-B Storage Facility does not exercise direct control over the quantities or types of waste generated at Hanford.

Very little hazardous waste is generated by unit operations. Most wastes are used protective clothing. Occasionally, spill cleanup residues may be generated.

10.4 SPECIFIC WASTE MINIMIZATION PROCEDURES

Liquid laboratory chemicals in small containers that cannot be redistributed onsite are bulked, if practicable, in accordance with the procedures described in Section 4.1.1.2. This activity serves to reduce the number of containers which are shipped and ultimately disposed as dangerous waste, since containers which are "empty" as defined in WAC 173-303-160(2) are crushed and disposed as solid waste rather than being included in the dangerous waste quantity (as occurs with labpacks).

Waste generated at the 305-B Storage Facility, while minimal, is managed to ensure that the quantity and toxicity are minimized.

Dangerous waste releases occurring within the 305-B Storage Facility are responded to and cleaned up as soon as possible in order to minimize the amount of cleanup-generated wastes. Releases are cleaned up in accordance with the procedures found in Section 4.1.1.8 and/or the 305-B Storage Facility contingency plan (Chapter 7.0).

Site personnel are instructed not to dispose non-dangerous wastes (office trash, beverage containers, etc.) in dangerous waste containers. Dangerous waste containers are kept closed except when adding or removing waste, which helps prevent inadvertent addition of ordinary refuse.

Hanford Facility RCRA Permit Modification Notification Forms

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Page 2 of 3: Appendix 7A, Section 2.0
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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
PUREX Storage Tunnels	**Part III, Chapter 3 and Attachment 28**

Description of Modification:

Remove Appendix 7A and replace with the attached Appendix 7A.

Appendix 7A, Section 2.0:

2.0 EMERGENCY COORDINATORS/BUILDING EMERGENCY DIRECTOR

Table 2-1. Emergency Coordinator/Building Emergency Director [a]

Designation	Job title	Work location	Work phone
Primary	Accelerated Deactivation Project Director	MO-414	373-4999
Alternate	Manager	MO-414	373-4160
Alternate	Manager	MO-414	373-4134
Alternate	Manager	3770	373-8105
~~Alternate~~	~~Manager~~	~~MO-414~~	~~376-7678~~

[a]The names and home phone numbers of all Emergency Coordinators/Building Emergency Director (EC/BED) are maintained at the single point-of-contact (the Hanford Patrol Operations Center) telephone number 373-3800 in accordance with the Hanford Facility RCRA Permit, Dangerous Waste Portion, General Condition II.A.4.

[b]Emergency response will be directed by the EC/BED until the Incident Commander arrives. The incident command structure and staff with supporting on-call personnel fulfill the responsibilities of the EC/BED as discussed in WAC 173-303-360.

During events, facility personnel perform response duties under the direction of the EC/BED. The Incident Command Post (ICP) is managed by either the senior Hanford Fire Department member present on the scene or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the Incident Commander (IC) and as such have the authority to request and obtain any resources necessary for protecting people and the environment. The EC/BED becomes a member of the ICP and functions under the direction of the IC. In this role, the EC/BED continues to manage and direct facility operations.

A listing of the primary and alternate EC/BEDs by title, work location and work telephone numbers is identified in the table above. The EC/BED is on the premises or is available through an "on-call" list 24 hours a day.

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. *Administrative and Informational changes.*

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
N. C. Boyter 3-21-01 Date	D. T. Evans 4/4/01 Date	R. Bond Date	L.E. Ruud Date

[1]Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
PUREX Storage Tunnels	**Part III, Chapter 3 and Attachment 28**

Description of Modification:

Remove Appendix 7A and replace with the attached Appendix 7A.

Appendix 7A, Section 3.0:

3.0 IMPLEMENTATION OF THE PLAN

The BED ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED shall use the following guidelines to determine if an event has met the requirements of WAC 173-303-360(2)(d):

1. The event involved an unplanned spill, release, fire, or explosion,

AND

2.a The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable.), or

2.b The unplanned fire or explosion occurred at the 200 ADP Facilities or transportation activity subject to RCRA contingency planning requirements,

AND

3. Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED shall determine, in consultation with the FH Site contractor environmental single-point-of-contact, if notification to Ecology is needed to meet WAC-173-303-360 (2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in DOE/RL-94-02, section 4.2.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident.

The BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from HP, HFD, or ambulance units is required, the Hanford Emergency Response Number (911) must be used to contact the POC and request the desired assistance. To request other resources or assistance from outside the 200 ADP facilities, the POC business number is used (373-3800).

~~To meet the requirements of the WAC, this plan will be considered implemented when the EC/BED has determined that a release, fire, or explosion involving dangerous waste, mixed waste or dangerous waste constituents that could threaten human health or the environment (WAC 173-303 Emergency) has occurred at the facility. This plan will be used in conjunction with DOE/RL 94-02, Section 4.2, for event recognition and response.~~

~~Under DOE guidance, this plan will be considered implemented whenever the EC/BED determines that one of the incidents listed in Section 3.1 has or will occur and that the severity is or will be such that there is a potential to endanger human health or the environment (DOE Unusual Occurrence or Emergency). Incidents listed in Section 3.1 could also be considered DOE emergencies that cause activation of the Hanford Emergency Operations Center and offsite emergency response organizations.~~

~~The EC/BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from Patrol, Fire, or ambulance units is required, the Hanford Emergency Response Number (911) must be used to contact the Patrol Operations Center and request the desired assistance. To request other resources or assistance from outside the facility, the Patrol Operations Center business number is used (373-3800).~~

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
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Hanford Facility RCRA Permit Modification
Part III, Chapter 3 and Attachment 28
PUREX Storage Tunnels

Replacement Section

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Appendix 7A

APPENDIX 7A

UNIT-SPECIFIC CONTINGENCY PLAN FOR THE 218-E-14 AND 218-E-15 STORAGE TUNNELS

APPENDIX 7A

This plan covers the following buildings and structures: 218-E-14 (Tunnel Number 1), 218-E-15 (Tunnel Number 2).

Approved by: _____ 01/31/01
Building Emergency Director — Date

Approved by: _____ 1-31-01
Emergency Preparedness — Date

Approved by: _____ 1/31/01
Hanford Fire Department — Date

Approved by: _____ 31 Jan '01
Environmental Compliance Officer — Date

This document will be reviewed annually and updated if necessary by the Building Emergency Director unless Hanford Facility RCRA Permit coordination requirements provides otherwise.

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Figure 2-1 . PUREX Storage Tunnels Evacuation Route 3

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1.0 GENERAL INFORMATION

The Plutonium-Uranium Extraction 218-E-14 and 218-E-15 (PUREX Storage Tunnels) are located in the 200 East Area of the 1,450-square kilometer U.S. Department of Energy, Richland Operations Office (DOE-RL) operated Hanford Site in southeastern Washington State. The Hanford Site Emergency Preparedness Program is based upon the incident command system which allows a graded approach for responses to emergency events. This plan contains a description of facility specific planning and response. It is used in conjunction with DOE/RL-94-02, *Hanford Emergency ManagementPlan.* Response to events is performed using facility specific and/or Site level emergency procedures.

1.1 Facility Name

U.S. Department of Energy Hanford Site PUREX Storage Tunnels.

1.2 Facility Location

Benton County, Washington; within the 200 East Area. Structures covered by this plan are:

218-E-14 Tunnel Number 1
218-E-15 Tunnel Number 2

1.3 Owner

U.S. Department of Energy
Richland Operations Office
825 Jadwin Avenue
Richland, Washington 99352

1.4 Facility Manager

Fluor Hanford
P.O. Box 1000
Richland, Washington 99352-1000

1.5 Description of Facility and Operations

The PUREX Storage Tunnels consist of two structures, 218-E-14 (Tunnel Number 1) and 218-E-15 (Tunnel Number 2). The tunnels are used for the storage of material from the PUREX Plant and from other onsite sources. The material stored in the tunnels contains dangerous waste and varying amounts of radioactive contamination; therefore, the stored material is managed as mixed waste. Tunnel Number 1 is filled to capacity. Tunnel Number 2 currently has storage positions available and may continue to receive mixed waste from the PUREX Plant and other onsite sources until the tunnel is either filled to capacity or a determination is made that waste will no longer be received.

Mixed waste is stored in the PUREX Storage Tunnels on railcars that are modified to serve as both transporter and storage platforms. Each railcar is retrievable. However, because the railcars are stored on a single, dead-end railroad spur inside each storage tunnel, the railcars can be removed only in reverse order (i.e., last in, first out).

1.6 Building Evacuation Route

The PUREX Storage Tunnels evacuation route is shown in Figure 1. During an emergency, personnel that enter the storage tunnels during material placement operations will evacuate via the north end of the railroad tunnel.

2.0 EMERGENCY COORDINATORS/BUILDING EMERGENCY DIRECTOR

Table 2-1. Emergency Coordinator/Building Emergency Director [a]

Designation	Job title	Work location	Work phone
Primary	Accelerated Deactivation Project Director	MO-414	373-4999
Alternate	Manager	MO-414	373-4160
Alternate	Manager	MO-414	373-4134
Alternate	Manager	3770	373-8105

[a]The names and home phone numbers of all Emergency Coordinators/Building Emergency Director (EC/BED) are maintained at the single point-of-contact (the Hanford Patrol Operations Center) telephone number 373-3800 in accordance with the Hanford Facility RCRA Permit, Dangerous Waste Portion, General Condition II.A.4.

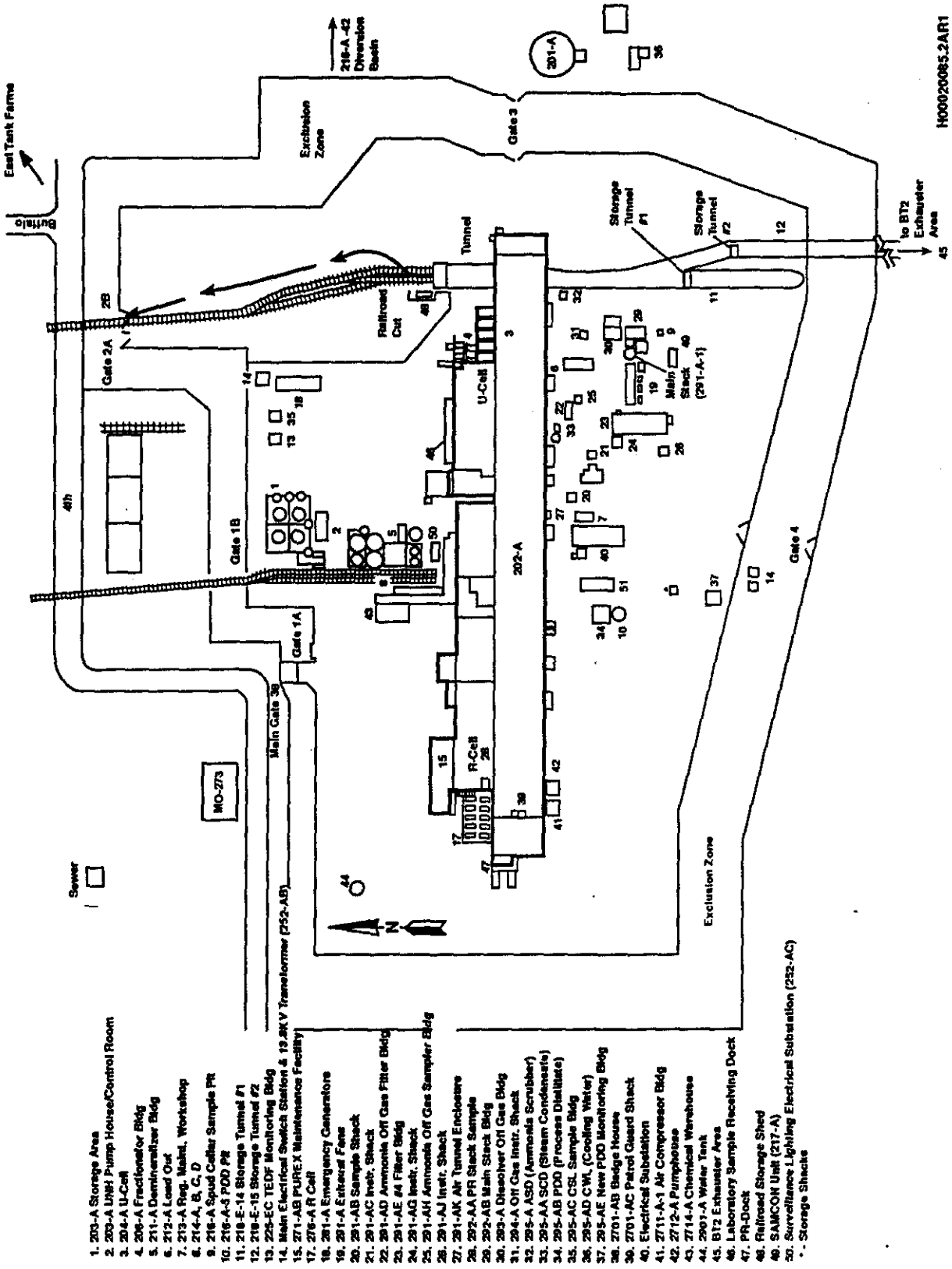
Emergency response will be directed by the EC/BED until the Incident Commander arrives. The incident command structure and staff with supporting on-call personnel fulfill the responsibilities of the EC/BED as discussed in WAC 173-303-360.

During events, facility personnel perform response duties under the direction of the EC/BED. The Incident Command Post (ICP) is managed by either the senior Hanford Fire Department member present on the scene or senior Hanford Patrol member present on the scene (security events only). These individuals are designated as the Incident Commander (IC) and as such have the authority to request and obtain any resources necessary for protecting people and the environment. The EC/BED becomes a member of the ICP and functions under the direction of the IC. In this role, the EC/BED continues to manage and direct facility operations.

A listing of the primary and alternate EC/BEDs by title, work location and work telephone numbers is identified in the table above. The EC/BED is on the premises or is available through an "on-call" list 24 hours a day.

1 **Figure 2-1 . PUREX Storage Tunnels Evacuation Route**

2
3



3.0 IMPLEMENTATION OF THE PLAN

The BED ensures that trained personnel identify the character, source, amount, and areal extent of the release, fire, or explosion to the extent possible. Identification of waste can be made by activities that can include, but are not limited to, visual inspection of involved containers, sampling activities in the field, reference to inventory records, or by consulting with facility personnel. Samples of materials involved in an emergency might be taken by qualified personnel and analyzed as appropriate. These activities must be performed with a sense of immediacy and shall include available information.

The BED shall use the following guidelines to determine if an event has met the requirements of WAC 173-303-360(2)(d):

1. The event involved an unplanned spill, release, fire, or explosion,

AND

2.a The unplanned spill or release involved a dangerous waste, or the material involved became a dangerous waste as a result of the event (e.g., product that is not recoverable.), **or**

2.b The unplanned fire or explosion occurred at the 200 ADP Facilities or transportation activity subject to RCRA contingency planning requirements,

AND

3. Time-urgent response from an emergency services organization was required to mitigate the event, or a threat to human health or the environment exists.

As soon as possible, after stabilizing event conditions, the BED shall determine, in consultation with the FH Site contractor environmental single-point-of-contact, if notification to Ecology is needed to meet WAC-173-303-360 (2)(d) reporting requirements. If all of the conditions under 1, 2, and 3 are met, notifications are to be made to Ecology. Additional information is found in DOE/RL-94-02, section 4.2.

If review of all available information does not yield a definitive assessment of the danger posed by the incident, a worst-case condition will be presumed and appropriate protective actions and notifications will be initiated. The BED is responsible for initiating any protective actions based on their best judgment of the incident.

The BED must assess each incident to determine the response necessary to protect the personnel, facility, and the environment. If assistance from HP, HFD, or ambulance units is required, the Hanford Emergency Response Number (911) must be used to contact the POC and request the desired assistance. To request other resources or assistance from outside the 200 ADP facilities, the POC business number is used (373-3800).

3.1 Dangerous and/or Mixed Waste

A seismic event, explosion, tornado, or an aircraft crash could cause damage to the storage tunnels and could involve environmental exposure to mixed waste. These events are considered the only credible sources of a release as the PUREX Storage Tunnels are unoccupied structures and there are no continuous processes associated with waste storage.

Emergency responses for credible dangerous and/or mixed waste releases can be found in the following sections.

3.2 Fire or Explosion

The fire or explosion hazard associated with the PUREX Storage Tunnels is considered to be very low because of the minimal amount of combustibles stored within the tunnels and the lack of an ignition source.

Because of the potential for mixed waste to leach, water is not the preferred choice for fire control. Reduction of the air supply to the storage area by isolation of the tunnel exhaust system, if operating, should permit a fire to self-extinguish. Should the fire continue to spread, heavy equipment and cranes will be called to the scene to cover areas of the tunnels that might collapse. In addition, the following actions are taken in the event of a fire or explosion:

- If present in the Tunnels, personnel leave by the nearest safe exit and proceed to the designated staging area for accounting
- The single point-of-contact (911) is notified immediately, who in turn initiates notifications to the EC/BED (or alternate) if necessary
- The EC/BED proceeds directly to the scene (if not already there)
- The EC/BED obtains all necessary information pertaining to the incident
- Depending on the severity of the event, the EC/BED or his/her designee may be required to provide notifications to the site contractor environmental single point of contact, which in turn notifies offsite agencies and/or the occurrence notification center informing them as to the extent of the emergency (including estimates of mixed waste quantities released to the environment) and any actions necessary to protect nearby buildings and/or structures
- Depending on the severity, the EC/BED requests activation of the affected area ICP to establish organizations to provide assistance from DOE-RL, other Hanford site contractors, and outside agencies (if 911 is called, the ICP will automatically be activated)
- The Hanford Patrol establishes roadblocks within the area to route traffic away from the emergency scene
- If necessary, Hanford Fire Department medical personnel remove injured personnel to a safe location, apply first aid, and prepare the injured for transport to medical aid stations or to local hospitals.

Depending on the magnitude of a natural phenomena event, fire, or an explosion, damage to the storage tunnels is possible. The hazards could involve personnel and environmental exposure to mixed waste. In the event of such an occurrence, a recovery plan will be developed. The recovery plan will take into consideration methods, if any, for retrieval of the waste stored within the tunnels.

3.3 Seismic Event/Tornado

Depending on the magnitude of the seismic event or tornado, damage to the storage tunnels is possible. The hazards could involve personnel and environmental exposure to mixed waste.

Emergency responses for seismic events and tornadoes would be the same as those for a fire or explosion. Refer to Section 3.2 of this plan.

3.4 Aircraft Crash

In addition to the potential for serious injuries or fatalities involved with an aircraft crash, damage to the storage tunnels is possible, which would result in a fire, explosion, or a mixed waste release. The hazards could involve personnel and environmental exposure to mixed waste.

Refer to Section 3.2 of this plan for emergency responses for fires and explosions.

3.5 Bomb Threat/Explosive Device

Depending on the magnitude of an explosion, damage to the storage tunnels is possible. The hazards could involve personnel and environmental exposure to mixed waste. For emergency responses, refer to Section 3.2 of this plan for explosions.

3.6 Damaged Dangerous and/or Mixed Waste Shipment

The PUREX Storage Tunnels do not accept shipments from offsite; therefore, the following response procedures only apply to the receipt of a damaged mixed waste shipment from onsite.

If the damaged shipment of hazardous substance, or dangerous waste/mixed waste arrives at the PUREX Storage Tunnels and the shipment is unacceptable for receipt, the damaged shipment should not be moved. The TSD unit personnel instead need to determine if there has been a release. If there has been a release, TSD unit personnel perform the following actions.

- Notify the supervisor or manager to advise of the situation. The supervisor or manager contacts the Emergency Coordinator in order to respond and assist in the evaluation of, and response to, the release (response to spills or releases may result in implementation of the contingency plan if the Emergency Coordinator makes this determination).
- Notify the shipper or generating unit of the damaged shipment and request that they provide any chemical information necessary to assist in responding to the release.
- Actions are taken to contain and/or to stop the spill if all of the following are true:
  - The identity of the substance(s) involved is known
  - Appropriate protective equipment and control/cleanup supplies are readily available
  - Personnel present have received the appropriate training and can safely perform the action(s) without assistance, or assistance is readily available from other trained TSD unit personnel.

If any of the above conditions are not met, or there is any doubt, personnel evacuate the area and remain outside, upwind of the TSD unit, pending the arrival of the Emergency Coordinator. Personnel remain available for consultation with the Emergency Coordinator, Hanford Fire Department, or other emergency response personnel, as appropriate.

4.0 UNIT/BUILDING EMERGENCY RESPONSE PROCEDURES

The initial response to any emergency is to immediately protect the health and safety of persons in the area. Identification of released material is essential to determine appropriate protective actions. Containment, treatment, and disposal assessment are secondary responses.

Emergency action levels associated with event classifications applicable to the PUREX Storage Tunnels include the following. A Site Area Emergency can be declared for a radioactive material release resulting from an explosion, natural hazards (i.e., seismic event and/or tornado), and aircraft crash. An Alert

Emergency can be declared for a fire, explosion, or high winds. Additional detail concerning emergency action levels is identified in *Emergency Plan Implementing Procedures*, DOE-0223, Appendix 1-2.G. The preceding sections describe the process for implementing basic protective actions as well as descriptions of response actions for events.

4.1 Notification

Notification will be made in accordance with the requirements of WAC 173-303-145 and WAC 173-303-360.

4.2 Identification of Released/Spilled Materials

Methods for identifying the character, source, amount, and areal extent of any materials when there has been a release or spill to the environment, a fire, or an explosion are outlined in DOE/RL-94-02, Section 4.2.

4.3 Prevention of Recurrence or Spread of Fires, Explosions, Releases

The EC/BED, as part of the incident command structure, takes the steps necessary to ensure that a secondary release, fire, or explosion does not occur. The following actions are taken:

- Isolate the area of the initial incident by shutting off power, closing off ventilation systems, if still operating, etc., to minimize the spread of a release and/or the potential for a fire or explosion
- Inspect surface of the tunnels for leaks, cracks, or other damage
- Contain and isolate residual mixed waste material
- Cover or otherwise stabilize areas where residual released mixed waste remains to prevent migration or spread from wind or precipitation run-off
- Install new structures, systems, or equipment to enable better management of mixed waste
- Reactivate adjacent operations in affected areas only after cleanup of residual mixed waste is achieved.

4.4 Termination of Event

For events where the Hanford Emergency Operations Center (Hanford-EOC) is activated, the RL Emergency Manager has the authority to declare event termination. This decision is based on input from the EC/BED, Incident Commander, and other emergency response organization members. For events where the Hanford-EOC is not activated, the Incident Command structure and staff will declare event termination.

4.5 Incident Recovery and Restart of Operations

A recovery plan is developed when necessary. A recovery plan is needed following an event where further risk could be introduced to personnel, the facility, or the environment through recovery action and/or to maximize the preservation of evidence. Depending on the magnitude of the event and the effort required to recover from it, recovery planning may involve personnel from RL and other contractors. If a recovery plan is required, it is reviewed by appropriate personnel and approved by a Recovery Manager before restart. Restart of operations is performed in accordance with the approved plan.

If this plan was implemented for a WAC emergency (see Section 3.0 of this plan), the Washington State Department of Ecology must be notified before operations can resume. DOE/RL-94-02, Section 5.1, discusses different reports to outside agencies. This notification is in addition to other required reports and must include information documenting the following conditions:

1. There are no incompatibility issues with the waste and released materials from the incident.
2. All the equipment has been clean, fit for its intended use, and placed back into service.

Additional information that Ecology requests regarding these restart conditions may be included in the required 15-day report identified in WAC 173-303-360(2)(k).

For emergencies not involving activation of the Hanford-EOC, the EC/BED ensures that conditions are restored to normal before operations are resumed. An onsite Recovery Manager could be appointed at the discretion of RL to restore conditions to normal. This process is detailed in DOE/RL-94-02, Section 9.0. The makeup of this organization depends on the extent of the damage and its effects. The onsite recovery organization will be appointed by the appropriate contractor's management.

4.6 Incompatible Waste

After an event, the EC/BED or the onsite recovery organization ensures that no waste that might be incompatible with the released material is treated, stored, and/or disposed of until cleanup is completed. Cleanup actions are taken by facility personnel or other assigned personnel. DOE/RL-94-02, Section 9.2.3, describes actions to be taken.

Waste from cleanup activities is designated and managed as newly generated waste. A field check for compatibility before storage is performed, as necessary. Incompatible wastes are not placed in the same container. Containers of waste are placed in storage areas appropriate for their compatibility class.

If incompatibility of waste was a factor in the incident, the EC/BED or the onsite recovery organization ensures that the cause is corrected. Examples include modification of an incompatibility chart of increased scrutiny of waste from a generating unit when incorrectly designated waste caused or contributed to an incident.

4.7 Post Emergency Equipment Maintenance and Decontamination

All equipment used during an incident is decontaminated (if practicable) or disposed of as spill debris. Decontaminated equipment is checked for proper operation before storage for subsequent use. Consumables and disposed materials are restocked. Fire extinguishers are recharged or replaced.

The EC/BED ensures that all equipment is cleaned and fit for its intended use before operations are resumed. Depleted stocks of neutralizing and absorbing materials are replenished, self-contained breathing apparatus are cleaned and refilled, protective clothing is cleaned or disposed of and restocked, etc.

5.0 EMERGENCY EQUIPMENT

Because personnel only enter the storage tunnels during material placement operations, no permanent emergency equipment, communications equipment, warning systems, personal protective equipment, or spill control and containment supplies are located in the tunnels.

During storage tunnel operations or an emergency response event, personnel use portable emergency equipment, which could include heavy equipment and cranes (Section 3.2). Also, for such operations, work plans are followed and pre-job safety meetings take place.

6.0 COORDINATION AGREEMENTS

The DOE-RL has established a number of coordination agreements, or memoranda of understanding (MOU) with various agencies to ensure proper response resource availability for incidents involving the Hanford Site. A description of the agreements is contained in DOE/RL-94-02, Table 3-1.

7.0 REQUIRED REPORTS

Post incident written reports are required for certain incidents on the Hanford Site in accordance with DOE/RL-94-02, Section 5.1.

8.0 REFERENCES

DOE/RL-94-02, Hanford Emergency Management Plan, as amended.

Hanford Facility RCRA Permit, Dangerous Waste Portion, Washington State Department of Ecology, Olympia, Washington, as amended.

DOE-0223, Emergency Plan Implementing Procedures, as amended.

Hanford Facility RCRA Permit Modification Notification Forms
Part III, Chapter 4 and Attachment 34
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Hanford Facility RCRA Permit, III.4.A:

III.4.A COMPLIANCE WITH APPROVED PERMIT APPLICATION

The Permittees shall comply with all requirements set forth in Attachment 34, including the Amendments specified in Condition III.4.B, if any exist. Enforceable portions of the application are listed below (All subsections, figures, and tables included in these portions are also enforceable, unless stated otherwise):

LERF Part A, Form 3, Permit Application, Revision 6

ETF Part A, Form 3, Permit Application, Revision 3

Section 2.2	Topographic Map, (non-enforceable sections in Chapter 2 were modified) from Class 1 Modification for quarter ending March 31, 2001
Section 3.2	Waste Analysis Plan, from Class 1 Modification for quarter ending March 31, 2001
Chapter 4.0	Process Information, from Class 1 Modification for quarter ending December 31, 1999
Chapter 5.0	Ground Water Monitoring, from Class 1 Modification for quarter ending June 30, 2000
Chapter 6.0	Procedures to Prevent Hazards, from Class 1 Modification for quarter ending September 30, 2000
Chapter 7.0	Contingency Plan, from Class 1 Modification for quarter ending September 30, 2000
Chapter 8.0	Personnel Training
Chapter 11.0	Closure and Financial Assurance, from Class 1 Modification for quarter ending March 31, 2001
Chapter 12.0	Reporting and Recordkeeping, from Class 1 Modification for quarter ending March 31, 2001
Chapter 13.0	Other Federal and State Laws, from Class 1 Modification for quarter ending March 31, 2001
Appendix 2A	Topographic Map
Appendix 3A	Waste Analysis Plan for the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, from Class 1 Modification for quarter ending March 31, 2001~~May 1998, as amended in Class 2 Modification for Revision 5~~
Appendix 4A	Detailed Drawings for the Liquid Effluent Retention Facility, from Class 1 Modification for quarter ending March 31, 2001~~0~~
Appendix 4B	Detailed Drawings for the 200 area Effluent Treatment Facility Container Storage Area and Tank Systems, from Class 1 Modification for quarter ending March 31, 2001~~0~~
Appendix 7A	Building Emergency Plan for the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, from Class 1 Modification for quarter ending September 30, 2000. Enforceable portions include Sections 1.5, 3.1, 4.0 (1st paragraph), 7.1, 7.1.1, 7.1.2, 7.2, 7.2.1, 7.2.2, 7.2.3, 7.2.4, 7.2.5, 7.2.5.1, 7.3, 8.2, 8.3, 8.4, 9.0, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 11.0, 12.0, and 13.0.
Appendix 8A	200 Area Liquid Waste Processing Facilities Administrative Policies, Dangerous Waste Training Plan, dated May 1998, as amended in Class 2 Modification for Revision 5

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
E. S. Aromi	Date 3/14/01	G. H. Sanders	Date APR 06 2001	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Hanford Facility RCRA Permit, III.4.B: Delete the conditions below the conditions have been incorporated into Appendix 3A.

III.4.B. AMENDMENTS TO THE APPROVED PERMIT APPLICATION

III.4.B.a. Section 4.4.6; add the following paragraph, "All tank systems holding dangerous waste are marked with labels or signs to identify the waste contained in the tanks. The labels or signs are legible at a distance of at least fifty (50) feet and bear a legend that identifies the waste in a manner which adequately warns employees, emergency response personnel, and the public, of the major risk(s) associated with the waste being stored or treated in the tank system(s)."

~~III.4.B.b. Appendix 3A, Waste Analysis Plan for the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility.~~

~~III.4.B.b.1. The Permittees shall comply with all the requirements, subsections, figures, tables, and appendices, included in the "Waste Analysis Plan for Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility," except that the "Wastewater Profile Sheet Form" is included as an example only. The actual Wastewater Profile Sheet format may vary, but will contain the same substantive information as the example form.~~

~~III.4.B.b.2. Section 6.1 Dry Powder Waste~~

~~The following terms used in this Section, including powder, dry powder, waste powder, and dry waste powder, are equivalent to the term "dry powder waste" as defined in lines 20 through 27 on page 6-1.~~

~~III.4.B.b.3. Section 6.3 Other Waste Generated at the 200 Area Effluent Treatment Facility~~

~~Insert the phrase "according to Washington State Regulatory Requirements" after the word "designated" in line 44 on page 6-4.~~

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and informational changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
E.S. Aromi	3/14/01 Date	G. H. Sanders	APR 06 2001 Date	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Remove and replace Appendix 3A with the attached Appendix 3A.

Permit Condition III.4.B.b.1. was incorporated in Section 1.0.

1.0 INTRODUCTION

In accordance with the federal and state regulations set forth in 40 Code of Federal Regulations (CFR) 264.13 and in Washington State Department of Ecology (Ecology) *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-300, this waste analysis plan (WAP) has been prepared for operation of the Liquid Effluent Retention Facility (LERF) and the 200 Area Effluent Treatment Facility (ETF) located in the 200 East Area on the Hanford Site, Richland, Washington.

The Permittees shall comply with all the requirements, subsections, figures, tables, and appendices, included in the "Waste Analysis Plan for Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility," except that the "Wastewater Profile Sheet Form" is included as an example only. The actual Wastewater Profile Sheet format may vary, but will contain the same substantive information as the example form.

The purpose of this WAP is to document the sampling and analytical methods, and describe the procedures which are utilized for all dangerous wastes that are managed in the specific treatment storage, and disposal (TSD) units identified in the Part A, Form 3, permit application for the LERF and the ETF (DOE/RL-97-03). This WAP also documents the requirements for generators of aqueous wastes that will be sent to the LERF or ETF for treatment. Throughout this WAP, the term generator includes any Hanford Site unit, including TSD units, whose process produces an aqueous waste.

The TSD units include a surface impoundment (LERF) which provides treatment and storage, a tank system at the ETF which provides treatment and storage, and a container management area at the ETF which provides drum storage and treatment. Additionally, this WAP discusses the sampling and analytical methods the treated effluent (treated aqueous waste) that is discharged from the ETF as a non-dangerous, delisted waste to the State-Approved Land Disposal Site (SALDS). Specifically, the WAP delineates the following: ...

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
E. S. Aromi	Date 3/14/01	G. H. Sanders	Date APR 06 2001	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Replace the Chapters 2.0, 3.0, 11.0, 12.0, and 13.0, with the attached Chapters 2.0, 3.0, 11.0, 12.0, and 13.0.

These sections were converted from WordPerfect to Microsoft Word, which resulted in formatting changes. No changes were made to the text.

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
2/14/01	APR 16 2001		
E. S. Aromi Date	G. H. Sanders Date	F. Jamison Date	L.E. Ruud Date

[1] Class 1 modifications requiring prior Agency approval.

[2] This is only an advanced notification of an intended Class [1]1, 2, or 3 modification, this should be followed with a formal modification request, and consequently implement the required Public Involvement processes when required.

[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Replace Appendix 3A with the attached Appendix 3A.

Appendix 3A, Section 1.1, last paragraph:

The treated effluent is contained in verification tanks where the effluent is sampled ~~[PERMIT REQUIRED CHANGE], and held until the analytical results~~ to confirm that the effluent meets the 'delisting' criteria. Under 40 CFR 261, Appendix IX, Table 2, the treated effluent from the ETF is considered a delisted waste; that is, the treated effluent is no longer a dangerous or hazardous waste subject to the hazardous waste management requirements of RCRA. The treated effluent is discharged under the Discharge Permit as a nondangerous, delisted waste to the SALDS, located in the 600 Area, north of the 200 West Area (Figure 1-1). Some delisted wastewater is recycled in the treatment process. Verification tank water is used to dilute bulk acid and caustic to meet processing needs reducing the demand for process water.

Modification Class: [1,2,3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
E. S. Aromi	Date 3/14/01	G. H. Sanders	Date APR 06 2001	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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[3] If the proposed modification does not match any modification listed in WAC 173-303-830 Appendix I, then the proposed modification should automatically be given a Class 3 status. This status may be maintained by the Department of Ecology, or down graded to [1]1, if appropriate.

Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Replace Appendix 3A with the attached Appendix 3A.

Appendix 3A, Section 6.1: Incorporate Permit Condition III.4.B.b.2.

1.1 SECONDARY WASTE GENERATED FROM TREATMENT PROCESSES

The following terms used in this Section, including powder, dry powder, waste powder, and dry waste powder, are equivalent to the term "dry powder waste".

A dry powder waste is generated from the secondary treatment train, from the treatment of an aqueous waste. Waste is received in the secondary treatment train in waste receiving tanks where it is fed into an evaporator. Concentrate waste from the evaporator is then fed to a concentrate tank. From these tanks, the waste is fed to a thin film dryer and dried into a powder, and collected into containers. The containers are filled via a remotely controlled system. The condensed overheads from the evaporator and thin film dryer are returned to the surge tank to be fed to the primary treatment train.

Occasionally, salts from the treatment process (e.g., calcium sulfate and magnesium hydroxide) accumulate in process tanks as sludge. Because processing these salts could cause fouling in the thin film dryer, and to allow uninterrupted operation of the treatment process, the sludge is removed and placed in containers. The sludge is dewatered and the supernate is pumped back to the ETF for treatment.

The secondary treatment system typically receives and processes the following by-products generated from the primary treatment train:

- Concentrate from the first RO stage
- Backwash from the rough and fine filters
- Regeneration waste from the ion exchange system
- Spillage or overflow collected in the process sumps.

In an alternate operating scenario, some aqueous wastes may be fed to the secondary treatment train before the primary treatment train. A more complete description of these processes can be found in Chapter 4.0 of the dangerous waste permit application for LERF and ETF (DOE/RL-97-03).

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: A.1.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

A. General Permit Provisions

1. Administrative and Informational changes.

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
E. S. Aromi	Date 3/14/01	G. H. Sanders	Date APR 06 2001	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Appendix 4A:

Remove Appendix 4A and replace with the attached Appendix 4A:

Table 4A-2. Liquid Effluent Retention Facility Piping and Instrumentation.

LERF System	Drawing Number	Outstanding ECNs	Drawing Title
Transfer Piping to 242-A Evaporator	H-2-79604, Sh 1,Rev. 3	~~None~~ ECN-648330	Piping Plot and Key Plans; 242-A Evaporator Condensate Stream (Sheet 1)
LERF Piping and Instrumentation	H-2-88766, Sh 1, Rev. ~~23~~	~~ECN-647888~~ ECN-648330 ECN-656789	P&ID; LERF Basin and ETF Influent (Sheet 1)
LERF Piping and Instrumentation	H-2-88766, Sh 2, Rev. ~~45~~	ECN-647209L ECN-648330	P&ID; LERF Basin and ETF Influent (Sheet 2)
LERF Piping and Instrumentation	H-2-88766, Sh 3, Rev. ~~56~~	~~None~~ ECN-648330 ECN-709380L	P&ID; LERF Basin and ETF Influent (Sheet 3)
LERF Piping and Instrumentation	H-2-88766, Sh 4, Rev. ~~56~~	~~None~~ ECN-648330 ECN-658584	P&ID; LERF Basin and ETF Influent (Sheet 4)
	H-2-89351, Sh 1, Rev. ~~57~~	None	Piping & Instrumentation Diagram - Legend

P&ID - piping and instrumentation diagram.

Modification Class: [1] [2] [3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: B.5.b.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

B. General Facility Standards
   5. Changes in the training plan
      b. Other changes

Submitted by Co-Operator:		Reviewed by RL Program Office:		Reviewed by Ecology:		Reviewed by Ecology:	
E. S. Aromi	Date 5/19/01	G. H. Sanders	Date APR 06 2001	F. Jamison	Date	L.E. Ruud	Date

[1] Class 1 modifications requiring prior Agency approval.

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Hanford Facility RCRA Permit Modification Notification Form

Unit:	Permit Part & Chapter:
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility	**Part III, Chapter 4 and Attachment 34**

Description of Modification:

Appendix 4B:

Remove Appendix 4B and replace with the attached Appendix 4B:

Table 4B-2. Drawings of Major Process Units and Tanks at the Effluent Treatment Facility and Load-In Station.

ETF Process Unit	Drawing Number	Outstanding ECNs	Drawing Title
Load-In Facility	H-2-817974, Sh. 1, Rev. 12	None	P&ID – ETF Truck Load-In Facility (Sheet 1)
Load-In Facility	H-2-817974, Sh. 2, Rev. 0	None	P&ID – ETF Truck Load-In Facility (Sheet 2)
Surge Tank	H-2-89337, Sh. 1, Rev. ~~11~~13	ECN-644244	P&ID – Surge Tank System (Sheet 1)
UV/Oxidation	H-2-88976, Sh. 1, Rev. 89	ECN-647245	P&ID – UV Oxidizer Part 1 (Sheet 1)
UV/Oxidation	H-2-89342, Sh. 1, Rev. 67	ECN-647245	P&ID – UV Oxidizer Part 2 (Sheet 1)
Reverse Osmosis	H-2-88980, Sh. 1, Rev. 910	None	P&ID – 1st RO Stage (Sheet 1)
Reverse Osmosis	H-2-88982, Sh. 1, Rev. ~~11~~12	None	P&ID – 2nd RO Stage (Sheet 1)
IX/Polishers	H-2-88983, Sh. 1, Rev. ~~10~~11	ECN-642800	P&ID – Polisher (Sheet 1)
Verification Tanks	H-2-88985, Sh. 1, Rev. 89	None	P&ID – Verification Tank System (Sheet 1)
ETF Evaporator	H-2-89335, Sh. 1, Rev. ~~12~~14	ECN-641719 ECN-653080L ~~ECN-641564~~ECN-651583	P&ID – Evaporator (Sheet 1)
Thin Film Dryer	H-2-88989, Sh. 1, Rev. ~~16~~17	ECN-648765 ~~ECN-642797~~ ECN-656781L	P&ID – Thin Film Dryer (Sheet 1)
Transfer Piping from LERF to ETF	H-2-88768, Sh. 1, Rev. 1	None	Piping Plan/Profile 4"– 60M-002-M17 and 3"-60M-001-M17 (Sheet 1)
Transfer Piping from Load-In Facility to ETF	H-2-817969, Sh. 1, Rev. 1	ECN-W291-015 ECN-641703 ECN-649104	Civil – ETF Truck Load-In Facility Site Plan (Sheet 1)

P&ID - piping and instrumentation diagram.
STRUCT - architectural/structural diagram.

Modification Class: [1 2 3]	Class 1	Class [1]1	Class 2	Class 3
Please check one of the Classes:	X			

Relevant WAC 173-303-830, Appendix I Modification: B.5.b.

Enter wording of the modification from WAC 173-303-830, Appendix I citation

B. General Facility Standards
   5. Changes in the training plan
      b. Other changes

Submitted by Co-Operator:	Reviewed by RL Program Office:	Reviewed by Ecology:	Reviewed by Ecology:
E. S. Aromi 3/14/01 Date	G. H. Sanders APR 06 2001 Date	F. Jamison Date	L.E. Ruud Date

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Hanford Facility RCRA Permit Modifications
Part III, Chapter 4 and Attachment 34
Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

Replacement Sections

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Chapter 3.0	Contents
Chapter 11.0	Chapter 9.0
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HANFORD FACILITY DANGEROUS WASTE PERMIT APPLICATION, LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT FACILITY

FOREWORD

The *Hanford Facility Dangerous Waste Permit Application* is considered to be a single application organized into a General Information Portion (document number DOE/RL-91-28) and a Unit-Specific Portion. The scope of the Unit-Specific Portion is limited to Part B permit application documentation submitted for individual, 'operating' treatment, storage, and/or disposal units, such as the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility (this document, DOE/RL-97-03).

Both the General Information and Unit-Specific portions of the *Hanford Facility Dangerous Waste Permit Application* address the content of the Part B permit application guidance prepared by the Washington State Department of Ecology (Ecology 1987 and 1996) and the U.S. Environmental Protection Agency (40 Code of Federal Regulations 270), with additional information needs defined by the *Hazardous and Solid Waste Amendments* and revisions of Washington Administrative Code 173-303. For ease of reference, the Washington State Department of Ecology alpha-numeric section identifiers from the permit application guidance documentation (Ecology 1996) follow, in brackets, the chapter headings and subheadings. A checklist indicating where information is contained in the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility permit application documentation, in relation to the Washington State Department of Ecology guidance, is located in the Contents Section.

Documentation contained in the General Information Portion is broader in nature and could be used by multiple treatment, storage, and/or disposal units (e.g., the glossary provided in the General Information Portion). Wherever appropriate, the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility permit application documentation makes cross-reference to the General Information Portion, rather than duplicating text.

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METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			**Length**		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			**Area**		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			**Volume**		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76456	cubic meters	cubic meters	1.308	cubic yards
Temperature			**Temperature**		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Force			**Force**		
pounds per square inch	6.895	kilopascals	kilopascals	1.4504×10^{-4}	pounds per square inch

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

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2.0 FACILITY DESCRIPTION AND GENERAL PROVISIONS [B AND E]

The LERF and the ETF, located in the 200 East Area, are two units of an aqueous waste treatment system. Dangerous and mixed aqueous waste streams as well as nondangerous aqueous waste streams are stored and treated in the LERF and the ETF. Aqueous waste is generated from various Hanford Facility waste management and remediation activities. The term 'effluent' in this document refers to the treated aqueous waste that is discharged from the ETF.

2.1 DESCRIPTION OF THE LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT FACILITY

The following sections provide general description of the LERF and the ETF and their process components. A more detailed discussion of the waste types treated and stored and the identification of processes and equipment are provided in Chapters 3.0 and 4.0, respectively. Because dangerous waste does not include the source, special nuclear, and by-product material components of mixed waste, radionuclides are not within the scope of this permit application documentation. The information on radionuclides is provided only for general knowledge.

2.1.1 Liquid Effluent Retention Facility

The LERF is composed of three surface impoundments, or basins, with a nominal capacity of 24.6 million liters each (Chapter 1.0). The LERF provides interim storage and treatment until the waste is transferred to the ETF for final treatment. Treatment at the LERF consists of flow and pH equalization, consistent with the surface impoundment treatment exemption (40 CFR 268.4).

The LERF basins are provided with primary and secondary composite liners, a leachate collection and removal system between the liners, and a floating cover. The LERF also includes piping and pumping systems, utilities, and a basin operations structure. Aqueous waste from the LERF is transferred to the ETF via pipelines.

2.1.2 200 Area Effluent Treatment Facility

The ETF is a flexible treatment unit that destroys or removes contaminants in an aqueous waste. Aqueous waste is transferred to the ETF through pipelines connected to the LERF or from the load-in station, located just east of the ETF. The Load-In Station currently consists two 25,898 liter storage tanks and a transfer pipeline that connects to the LERF/ETF transfer pipeline.

The ETF consists of a series of treatment or process units that remove or destroy essentially all of the dangerous waste and radioactive constituents, except tritium. The treatment units are grouped into either the primary or secondary treatment train. The major treatment units are located in the primary treatment train. The primary treatment train consists of the following units:

- Surge tank
- Rough filter
- Ultraviolet light/oxidation (UV/OX)
- pH adjustment
- Hydrogen peroxide decomposer
- Fine filter
- Degasification

- Reverse osmosis (RO)
- Polisher [ion exchange (IX) column]
- Final pH adjustment and verification.

Contaminants are concentrated and dried to a powder in the secondary treatment train. The secondary treatment train includes the following units:

- Secondary waste receiving tanks
- ETF evaporator (forced circulation evaporator)
- Concentrate tank
- Thin film dryer
- Container handling
- Supporting systems.

The dry powder waste generated from the treatment process is containerized and transferred to the appropriate treatment, storage, and/or disposal (TSD) unit. The treatment process also generates a maintenance and operations waste stream that includes such waste as dewatered spent resin, spent filter media, RO membranes, and UV lamps. The maintenance and operations waste stream also is containerized and transported to the appropriate TSD unit.

The treated effluent is contained in verification tanks where the effluent is sampled and held until the analytical results confirm that the effluent meets the 'delisting' criteria. Under 40 CFR 261, Appendix IX, Table 2, the treated effluent from the ETF is a 'delisted' waste; that is, the treated effluent is no longer a dangerous or hazardous waste subject to the hazardous waste management requirements of the *Resource Conservation and Recovery Act* (RCRA) *of 1976*, as amended.

2.1.3 Other Environmental Permits

All environmental permits that are required to support operation of the LERF and ETF are identified in the Annual Hanford Site Environmental Permitting Status Report (e.g., DOE/RL-96-63).

2.1.4 Construction Schedule

Any proposed new construction will be managed as described in the Hanford Facility RCRA Permit.

2.2 TOPOGRAPHIC MAP [B-2]

Topographic map (Drawing H-13-00039) is located in Appendix 2A.

2.3 ROADWAY TRAFFIC TO LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT FACILITY [B-4]

General traffic information for the Hanford Facility is presented in the General Information Portion (DOE/RL-91-28).

Three 6.1-meter-wide roads were built for the LERF. An asphalt perimeter road circumscribes the LERF inside the operational security fence. A gravel road was constructed around the 200 East Area limited access perimeter fence. A second gravel service road running north and south through the area was

constructed to connect with the perimeter service road. Vehicle access to the ETF is by a paved road running east from Canton Avenue. Traffic volume on these roads is light.

2.4 RELEASE FROM SOLID WASTE MANAGEMENT UNITS [E]

Information concerning releases from solid waste management units is discussed in the General Information Portion (DOE/RL-91-28). However, no known releases have been detected from the LERF since the installation of the groundwater monitoring network (refer to Chapter 5.0).

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APPENDIX

3A WASTE ANALYSIS PLAN FOR LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT FACILITY ..... APP 3A-i

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3.0 WASTE ANALYSIS [C]

This chapter provides information on the chemical, biological, and physical characteristics of the aqueous waste treated and stored at LERF and ETF. The information includes waste descriptions, designations, and a waste analysis plan (Appendix 3A) for the treatment and storage of waste.

3.1 CHEMICAL, BIOLOGICAL, AND PHYSICAL ANALYSIS [C-1]

This section describes the chemical, biological, and physical characteristics of the aqueous waste treated and stored at LERF and ETF, including the following:

- A description of the waste types
- A description of the dangerous and/or mixed waste characteristics and a basis for the designation of the waste as dangerous or mixed waste.

Information on sampling methods is provided in the waste analysis plan (Appendix 3A).

3.1.1 Characteristics of Waste Treated at the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility

The LERF and ETF store and treat 242-A Evaporator process condensate and other aqueous waste streams from onsite waste management and remediation activities. A description of the waste types managed at the LERF and ETF is located in Chapter 1.0.

3.1.2 Characteristics of Waste Streams Generated at the 200 Area Effluent Treatment Facility

The ETF generates a treated effluent stream that is contained in verification tanks. The treated effluent is sampled and held in these tanks until analytical results verify that the effluent meets the 'delisting' criteria (40 CFR 261, Appendix IX, Table 2). Following verification, the treated effluent is released as a nondangerous waste to a disposal site in the 200 West Area.

Two nonaqueous waste streams are generated during the operation of ETF: a waste stream from the treatment process and a waste stream from maintenance and operations activities. The ETF treatment process removes contaminants from an aqueous waste. These contaminants and treatment by-products are concentrated into a powder, containerized, and transferred to the Central Waste Complex (CWC) for storage or to the Low-Level Burial Grounds (LLBG) or the Environmental Restoration Disposal Facility for disposal (as appropriate).

Waste generated from maintenance and operations activities could include, but is not limited to, dewatered spent bead resin, spent membranes, spent high-efficiency particulate air (HEPA) cartridges, spent filter elements, spent activated carbon cartridges, and spent ultraviolet lamps. Nonradioactive dangerous waste from maintenance and operations activities could include chemicals used in the various processes (Chapter 2.0). The maintenance and operations waste is containerized and transferred to an onsite TSD unit, or if nonradioactive, shipped offsite to a TSD facility.

3.2 WASTE ANALYSIS PLAN [C-2]

The *Waste Analysis Plan for Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility* is provided in Appendix 3A.

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9.0 EXPOSURE INFORMATION REPORT

Exposure information for the LERF is discussed in the General Information Portion (DOE/RL-91-28).

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10.0 WASTE MINIMIZATION [D-9]

To fulfill the requirements of 40 CFR 264.73(b)(9), a certification form that the LERF and the ETF have a waste minimization/pollution prevention program in place will be entered, annually, into the LERF and the ETF operating record.

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11.0 CLOSURE AND FINANCIAL ASSURANCE [I]

This chapter describes the planned activities and performance standards for closing LERF and ETF.

11.1 CLOSURE PLAN/FINANCIAL ASSURANCE FOR CLOSURE [I-1]

The LERF and ETF will be clean closed with respect to dangerous waste contamination that resulted from operation as TSD units, with closure of LERF occurring first. To facilitate closure, the LERF retention basins are being viewed as consisting of seven components: the covers and primary liner, drainage layer system/bentonite carpet liner, secondary liner, soil bentonite, internal and/or external piping, ancillary equipment, and concrete basins. To facilitate closure of ETF, ETF is being viewed as consisting of six components: tanks, internal and/or external piping, ancillary equipment, concrete floors/dikes/encasements, structures, and soil directly beneath the structure. It is anticipated that closure of LERF and ETF will begin after the projected 30-year active life of LERF and ETF. If it is determined that clean closure is not possible, the closure plan will be modified to address required postclosure activities.

Uncontaminated structures either will be left for future use or disassembled, dismantled, and removed for disposal. Uncontaminated equipment and structures could include aqueous makeup, HVAC and piping, steam condensate and cooling water piping, and the control room and office areas.

Clean closure requires decontamination or removal and disposal of all dangerous waste, waste residues, contaminated equipment, soil, or other material established in accordance with the clean closure performance standards of WAC 173-303-610(2). This and future closure plan revisions will provide for compliance with these performance standards.

11.2 CLOSURE PERFORMANCE STANDARD [I-1a]

Clean closure, as provided for in this plan, and in accordance with WAC 173-303-610(2), will eliminate future maintenance and will be protective of human health and the environment by removing or reducing chemical contamination at LERF and ETF to levels that eliminate the threat of contaminant escape to the environment.

After closure, the appearance of the land where the LERF and ETF are located will be consistent with the appearance and future use of its surrounding land areas. This plan proposes to leave clean structures and equipment in place after closure for potential use in future operations. This need will be evaluated at the time of closure.

11.2.1 Closure Standards for Metal Surfaces, Rubber, Tanks, and Concrete

This closure plan proposes use of a 'clean debris surface' (defined in the following paragraph) as the clean closure performance standard for the metal surfaces, rubber (i.e., basin covers, liners, etc.), tanks, and concrete that will remain after closure. This approach is consistent with Ecology guidance (Ecology 1994a) for achievement of clean closure. Additionally, adherence to this guidance ensures that all residues have been removed as required by WAC 173-303-640 for clean closure of the ETF tank systems. The ETF verification tanks will be considered "clean" if the delisting limits were not exceeded

for the effluent in the tanks. If the delisting limits were exceeded, closure activities will be as described in Section 11.3.4.3.

The clean debris surface standard is verified visually. "A clean debris surface means the surface, when viewed without magnification, shall be free of all visible contaminated soil and hazardous waste except residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area" (40 CFR 268.45). When a physical extraction method is used on concrete, the performance standard is based on removal of the contaminated layer of debris. The physical extraction performance standard for concrete is removal of 0.6 centimeter of the surface layer and treatment to a clean debris surface. Inspections to verify achievement of a clean debris surface will be performed and documented.

11.2.2 Closure Standards for Internal and External Piping

The internal and external piping of both LERF and ETF will be flushed and drained as part of closure. The rinsate will be sampled and analyzed. Results less than designation limits for the constituents of concern will be accepted as indicating that the piping is clean with respect to dangerous waste or dangerous waste residues. If the rinsate designates as a dangerous waste, the piping will be flushed again. If it is not possible to meet the clean closure performance standard, the particular piping of concern will be removed and disposed of accordingly.

11.2.3 Closure Standards for Ancillary Equipment

Ancillary equipment is defined as pumps and other miscellaneous equipment not otherwise specified in this closure plan. Ancillary equipment will be removed and disposed.

11.2.4 Closure Standards for Underlying Soils

The LERF retention basins have a leachate collection system for leaks or spills that channels the liquid to drains or sumps. The collected liquid is pumped back into the basins, thereby preventing spills from reaching the soil. The soil only could be contaminated if the secondary liner had failed. To determine if failure occurred, the primary liner will be inspected for leaks, holes, or punctures and the drainage gravel and bentonite carpet liner underneath the primary liner will be sampled and analyzed for contamination. If the drainage gravel analytical results determine that the constituents of concern are at or below agreed to regulatory cleanup levels (i.e., Hanford Site soil background levels (DOE-RL 1993) and/or residential exposure assumptions according to the Model Toxics Control Act), the gravel will be considered clean for closure. Only if contamination is found in the drainage gravel/bentonite carpet liner will the secondary liner surfaces be inspected for leaks, holes, or punctures, which (if existing) could have provided a pathway to soil for contamination (refer to Chapter 4.0, Figure 4-3 for basin diagram). If no leaks, holes, or punctures are found in the primary liner or if the drainage gravel/bentonite carpet liner is found not to be contaminated, the soil will be considered to be clean closed. However, if leaks, holes, or punctures are found in the primary liner or the gravel is contaminated, the secondary liner surfaces will be inspected. If no leaks, holes, or punctures are found in the secondary liner surfaces, the soil will be considered clean closed. If such leaks, holes, or punctures are identified, potential soil contamination will be investigated. Soil will be sampled and analyzed for constituents of concerns. If the soil analytical results determine that the constituents of concern are at or below agreed to regulatory cleanup levels, the soil will be considered clean closed.

Clean closure of soil under the ETF will be accomplished by demonstrating that the coated concrete floor kept contaminants from reaching the soil. The coated concrete floor provided secondary containment for all the tanks and process piping. Unless inspections identify potential through-thickness cracks indicating containment failure and a subsequent potential for soil contamination from TSD unit operations, the soil will be considered clean closed. However, if inspections identify such cracks and there have been documented spills in the vicinity, potential soil contamination will be investigated. Soils will be sampled and analyzed for constituents of concerns. If the soil analytical results determine that the constituents of concern are at or below agreed to regulatory clean up levels, the soil will be considered clean closed. Regulatory cleanup levels are defined by the Hanford Facility RCRA Permit (Condition II.K.). If verification sampling is required, a sampling analysis plan will be prepared before closure in a manner consistent with Ecology guidance (Ecology 1994a) for achievement of clean closure.

11.3 CLOSURE ACTIVITIES [I-1b]

The LERF and ETF were designed for a 30-year active life. At the time of closure, the closure plan will be modified as necessary to reflect current regulation or informational revisions. If it is determined that clean closure is not possible, the closure plan will be modified to address required postclosure activities.

11.3.1 General Closure Activities

The approach to LERF closure is to dispose of accumulated basin aqueous waste by processing the waste through ETF. Primary basin liners and covers will be decontaminated or disposed of as appropriate. Any remaining solids (residue) within basins will be removed, designated, and disposed of accordingly. Piping associated with LERF closure is intended to be decontaminated and left in place. Rinsate generated during decontamination also will be disposed of through ETF. Sampling will assess whether contamination beneath the primary liner has occurred. Contamination, if present, will be managed in compliance with regulatory requirements.

The approach to ETF closure is to process any aqueous waste through the effluent treatment system. Any containerized dangerous waste and/or mixed waste will be transferred to other TSD units. All structures and equipment will be decontaminated and/or disposed. Piping associated with ETF closure is intended to be decontaminated and left in place. Contamination, if present, will be managed in compliance with regulatory requirements.

Equipment or materials used in performing closure activities will be decontaminated or disposed at a permitted facility.

11.3.2 *Constituents of Concern for Closure for the Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility*

Using the list of dangerous waste numbers in the Part A, (Chapter 1.0) process knowledge and the risk to human health and the environment, the constituents of concern for closure will be determined at through the data quality objective process.

11.3.3 Removing Dangerous Waste [I-1b(2)]

At the start of LERF closure, aqueous waste will be transferred sequentially from each basin to ETF for treatment. At a treatment rate of about 284 liters per minute, it will take approximately 60 days to empty

a full basin. Basin covers will remain in place to prevent possible wind dispersion of waste until all basin waste has been removed.

All of the aqueous waste inventory at the ETF will be processed before closure. Any residue remaining in piping, equipment, or the LERF liner will be removed to an appropriate disposal unit. All containerized waste will be dispositioned. All secondary waste in containers will be transferred to an appropriate TSD unit.

11.3.4 Decontaminating Structures, Equipment, and Soils [I-1b(3)]

This section discusses the activities necessary to implement a clean closure strategy for the LERF and ETF. Before closure activities begin, any waste inventory stored will be removed. After the waste inventory is removed, clean closure of the LERF covers and primary liner, drainage layer/leachate collection system/bentonite carpet liner, secondary liner, soil bentonite, the internal piping, ancillary equipment, and the concrete catch basins will be accomplished by decontaminating the components as necessary, and demonstrating that clean closure performance standards are met (Section 11.1.1). To facilitate closure of ETF, tanks, internal piping, external piping, ancillary equipment, concrete floors/dikes/encasements, structures, and soil directly beneath the structure will be decontaminated, as necessary, to demonstrate that the clean closure performance standards are met.

Removal and disposal of most of the components will be determined at time of closure. Clean closure of the soil will be accomplished by demonstrating that the concrete kept contaminants from reaching the soil.

11.3.4.1 Covers and Liners

After all pumpable waste has been removed from a given basin at LERF, the cover for that basin will be removed. The cover either will be decontaminated or disposed of appropriately. If the cover is disposed of, the cover will be cut up within the basin and loaded into a lined dump truck for transport and disposal. If the covers are to be reused, an initial decontamination effort will be made by spraying the underside of the cover while in place over a basin. The intent of preremoval spraying is to minimize subsequent decontamination efforts and to use the basin as a wash water catchment. Each cover will be inspected visually for physical damage in the same manner as the primary liners. Visible signs of damage to the cover will be repaired as specified by the cover manufacturer. The cover decontamination procedure will be to position a cover into its basin and wash the cover. Any openings, such as for vents, will be sealed temporarily so that rinsate cannot seep through. The method and degree of washing will be the same as necessary for the respective basin liner. The generated rinsate will be transferred from the basin to the ETF or appropriate TSD unit.

The primary liner will be inspected visually for physical damage and surveyed radiologically before any decontamination efforts. Physical damage will be defined as tears, holes, or punctures such that the liner would not hold water. A description and location of any physical damage found will be noted in a inspection record. Visible signs of damage to the liner will be repaired per procedures specified by the manufacturer before decontamination to prevent liquid solutions from driving potential contamination down into the drainage gravel. The purpose of the inspection will be twofold: to identify and map any physical damage in the primary liner that might have allowed contaminants a pathway to the drainage gravel below; and to identify areas that potentially are contaminated with dangerous waste or dangerous waste residues. The inspection standard for the liner will be a clean debris surface as defined in Section 11.1.1.1. The inspection of the liner for a clean debris surface will be documented on an inspection record. Those areas already meeting the standard can be clean closed as is, based on Ecology acceptance of the completed record.

Those potentially contaminated areas will undergo decontamination to meet the clean closure standard of a clean debris surface. Plastic surfaces indicated by visual examination as being potentially contaminated will be decontaminated through use of physical extraction technologies such as high-pressure steam and water sprays coupled with a detergent wash.

Achievement of a clean debris surface will be documented on an inspection record. Decontamination rinsate will be transferred directly to the ETF or transferred to another basin before ultimate disposal. If it is not possible to meet the clean closure performance standard, or there is no further need for the liner, the primary liner could be removed, designated, and disposed of accordingly. The inspections for a clean debris surface will be documented on an inspection record.

11.3.4.2 Drainage Layer/Bentonite Carpet Liner/Secondary Liner

Assessment of contamination beneath the LERF's primary liner will be performed within each basin by sampling the drainage gravel. Biased rather than random location selection will be used to increase the probability of detecting leachate contamination. Sampling points will be chosen where physical damage was noted during the inspection of the primary liner or areas where the underlying material porosity and permeability and the hydraulic head would most likely drive any leachate. The leakage rate through the liner would increase toward the bottom of the liner as hydraulic head increases. Any leakage that did occur in the sloped sides could be expected to travel down slope through the geotextile between the primary and secondary liner until reaching the bottom of the liner. Therefore, the most likely area of contamination would be the drainage gravel.

Gravel samples will be collected by removing the bentonite carpet liner and making an incision in the geotextile. Sampling will be performed in accordance with existing procedures at the time of sampling. Special care will be needed in sampling for volatiles. To aid in ensuring sample integrity, the initial removal of gravel to create the gravel profile will not be done unless the samples can be collected immediately.

Sample collection will occur immediately after profile exposure. If no constituents of concern are found above soil closure performance standards (Section 11.1.1), no further analysis will be done. If the initial sample analysis indicates liner leakage, analysis of the bottom sample will be performed to determine the depth of contamination. Additional gravel samples from different locations will be taken to determine the spatial extent of contamination.

A visual assessment of the underlying basin integrity will be made at the bottom of each sampled location and wherever else gravel is removed. If the basin is perceived to be damaged such that leakage could have occurred beneath the secondary liner, an amendment to the closure plan will be submitted to allow time for additional sampling and possible gravel removal. Sampling beneath the secondary liner, if necessary, will be attempted in accordance with sampling procedures for beneath the primary liner. Sampling beneath the secondary liner has not been extensively addressed because of the remote probability of its occurrence. The drainage gravel will be the preferred flow path even if minor leaks exist in the secondary liner. The secondary liner is resting on a soil/bentonite bed, which would tend to seal any punctures in the secondary liner as hydraulic head built up.

Sampling and disposal objectives will be determined at the time of closure activities through the data quality objectives process.

11.3.4.3 Tanks

After all pumpable waste has been removed from the tanks at ETF, the interior of the tanks, including the internal components such as the agitator, will be washed down by adding or spraying with steam, a

water-soluble cleaner, or other approved method. The tanks will be emptied and the interiors visually examined.

After rinsing, the tanks will be inspected visually for compliance with the performance standard. Because of possible radiation exposure, visual inspection might be made remotely using a camera or other device that allows verification of meeting the standard. If any areas are found to not meet the clean debris surface performance standard, these areas will be decontaminated in-place. Per the debris rule, only removal of contaminants from the surface layer is necessary for metal surfaces. Contamination will be removed from the surface layer using either high-pressure water blasting (a physical extraction method) or by hand or remote wiping, washing, brushing, or scrubbing using an approved cleaner, and rinsing with water or by other appropriate methods.

The outside of the tanks also will be inspected for compliance to the performance standard. Any areas found to not meet this performance standard will be decontaminated in-place. Contamination will be removed from the surface layer using any of the methods described for internal tank decontamination or another appropriate method. Before using decontamination solutions on the outside of the tanks, the floor will be inspected for cracks or other openings that could provide a pathway to soil. This inspection will be performed as described in Section 11.1.4.6 in conjunction with mapping of potential through-thickness cracks. Any such cracks will be mapped. The cracks will be sealed before beginning treatment or other engineered containment devices (e.g., portable catch basins, liners) will be used to collect and contain solutions.

Decontamination residues will be collected, designated, and managed as appropriate. If it is not possible to meet the clean closure performance standard, contaminated portions of the tanks could be removed, designated, and disposed of accordingly. The inspections for a clean debris surface will be documented on an inspection record.

11.3.4.4 Internal and External Piping and Ancillary Equipment

The internal piping for both LERF and ETF will be rinsed and the rinsate will be sampled and analyzed for constituents of concern. The rinsate will be designated and disposed of appropriately. If the rinsate does not designate based on the concentrations of the constituents of concern, the internal piping will be blanked to ensure that the tanks are isolated and the piping will be considered clean with respect to RCRA. If the rinsate designates as a dangerous waste, the piping will be flushed again. If necessary the piping will be rinsed with a decontamination solution before sampling and analyses. If it is not possible to meet the clean closure standard, portions of the internal piping will be removed, designated, and disposed of accordingly. The ancillary equipment will be removed, designated, and disposed of accordingly.

External piping (transfer lines) between the 242-A Evaporator and LERF and between LERF and ETF will be flushed and the rinsate analyzed for constituents of concern. If the rinsate designates as a dangerous waste, the piping will be flushed again. If necessary the piping will be rinsed with a decontamination solution before sampling and analyses. If it is not possible to meet the clean closure standard, the piping will be removed and disposed of accordingly. If the rinsate does not designate, the piping will be considered clean and will remain in place.

If the rinsate designates as dangerous waste, rinsate from the external piping and LERF internal piping will be processed through ETF. Rinsate from ETF will be transferred to another TSD unit.

11.3.4.5 Concrete

At LERF, the concrete catch basins are located at the northeast corner of each retention basin, where inlet pipes, leachate risers, and transfer pipe risers emerge for the basin. The concrete catch basin is curbed,

and coated with a chemical resistant epoxy sealant. The concrete catch basin is sloped so that any leaks or spills from the piping or connections will drain into the basin. At the ETF, the coated concrete floor and berm provides secondary containment for all the tanks and process piping.

At LERF and ETF, all concrete will be inspected visually and surveyed radiologically before any decontamination. The purpose of the inspection will be twofold: to identify and map any cracks in the concrete that might have allowed contaminants a pathway to the soil below (Section 11.1.2.3.); and to identify areas that potentially are contaminated with dangerous waste or dangerous waste residues. The inspection standard will be a clean debris surface as defined in Section 11.1.1. The inspection of the concrete for a clean debris surface will be documented on an inspection record. Those areas already meeting the standard can be clean closed as is.

Those potentially contaminated areas will undergo decontamination to meet the clean closure standard of a clean debris surface. The concrete will be washed down, the rinsate collected, designated, and disposed of accordingly. The concrete will be reinspected for a clean debris surface. Concrete surfaces indicated by visual examination as still being potentially contaminated will have the surface layer removed to a depth of 0.6 centimeter by scabbling or other approved methods. This will not threaten the environment, even if potential through-thickness cracks had been found during the inspection, because concrete decontamination (scabbling) will not employ liquid solutions that could enter cracks and because scabbling residues will be vacuumed away from cracks as any residue is generated.

Achievement of a clean debris surface will be documented on an inspection record. Decontamination residues will be collected, designated, and managed as appropriate.

11.3.4.6 Structures

If contaminated with either dangerous or mixed waste constituents, the ETF structures will be decontaminated and/or disassembled, if necessary, packaged, and disposed of in accordance with existing land disposal restrictions (WAC 173-303-140).

Closure steps could include the following activities.

- Containerize (as necessary and practicable) and remove any remaining waste.
- Review operating records for spillage incidents and visually inspect storage area surfaces for evidence of contamination or for cracks that could harbor contamination or allow the escape of decontamination solutions. Inspect storage area surfaces for visible evidence of contamination (e.g., discoloration, material degradation, wetness, odor). If contamination is evident, the affected area(s) will be decontaminated.
- Decontaminate ETF walls and floors to minimize the potential for loose contamination and facilitate any required radiation surveys and/or chemical field screening. The structures could be cleaned by water rinse or high-pressure, low-volume steam cleaning coupled with a detergent wash. After decontamination, the walls and floors will be compared to closure performance standards.
- Collect rinsate and manage as dangerous waste for appropriate disposal.
- Secure (lock) personnel entries into building and post doors with appropriate warning signs.

Clean closure of structures will occur in accordance with WAC 173-303-610. Remediation of soil contamination beneath or around containment buildings will be performed in conjunction soil closure requirements.

11.3.4.7 Underlying Soils

Clean closure of soil under LERF's secondary liner will be accomplished by demonstrating that the liners and leak detection system kept contaminants from reaching the soil. The secondary liner provided secondary containment for the LERF basins. Unless inspections identify potential leaks, punctures, cracks, or tears indicating containment failure and a subsequent potential for soil contamination from TSD unit operations, the soil will be considered clean closed. However, if inspections identify such leaks, punctures, etc., potential soil contamination will be investigated.

Clean closure of soil under ETF will be accomplished by demonstrating that the coated concrete floor kept contaminants from reaching the soil. The coated concrete floor and bermed area provided secondary containment for all the tanks and process piping. Unless inspections identify potential through-thickness cracks indicating containment failure and a subsequent potential for soil contamination from TSD unit operations, the soil will be considered clean closed. However, if inspections identify such cracks and there have been documented spills in the vicinity, potential soil contamination will be investigated.

Where it is possible to visually inspect directly beneath the tanks, a visual inspection will be performed. Where it is not possible to visually inspect beneath the tanks, an evaluation of the tank integrity will be made. The condition of the tank will be evaluated to determine if there was any potential for leakage. If no cracks, severe corrosion, or evidence of leaks are observed, it will be reasoned that mixed or dangerous waste solutions could not have penetrated to the soil directly below the tank.

External piping (transfer lines) between the 242-A Evaporator and LERF and LERF and ETF are double-lined with a leak detection system. If records indicate that no leaks from the primary piping occurred, the soil will be considered clean with respect to RCRA closure.

11.4 MAXIMUM WASTE INVENTORY [I-1c]

Each LERF basin is designed to store 24,605,000 liters. The maximum aqueous waste inventory for the three basins is 73,815,000 liters.

The ETF is constructed to treat and store aqueous waste streams. The treated effluent is stored in three verification tanks until it is determined if the effluent meets required standards. The summation of the three verification tanks is 7,608,654 liters. A secondary waste is generated during operation of the ETF. This secondary waste consists of mixed waste generated and containerized during the operation of the ETF and nonradioactive dangerous waste such as chemicals used in the various processes. The maximum waste inventory for the container storage of the secondary waste is 147,630 liters.

11.5 CLOSURE OF CONTAINERS, TANKS, AND SURFACE IMPOUNDMENTS [I-1d]

The following sections cover closure of containers, closure of tanks, and closure of surface impoundments.

11.5.1 Closure of Containers [I-1d(1)]

Containers at ETF will be used to contain dangerous waste in the event of a spill, unexpected release, or equipment failure. Containers will be used to accumulate nonradioactive dangerous waste and/or mixed waste. Any containers used to contain dangerous and/or mixed waste at the ETF will be disposed of in

the appropriate manner. Containers of dangerous and/or mixed waste will not be left in the ETF after closure.

11.5.2 Closure of Tanks [I-1d(2)]

Clean closure of ETF will consist of the removal and disposal of all dangerous waste and the decontamination and/or removal and disposal of contaminated equipment, including tanks. The ETF was designed to incorporate removable components. This design facilitates closure by allowing complete removal of equipment contaminated with dangerous and mixed waste.

11.5.3 Closure of Surface Impoundments [I-1d(4)]

At closure, all of LERF that received regulated waste will be closed in accordance with the requirements of WAC 173-303-650(6)(a)(i). All equipment, structures, and other material associated with closure of LERF will be decontaminated or removed in accordance with WAC 173-303-610(2). All basin waste and decontamination rinsate will be transferred to ETF. Sampling and testing will be conducted.

11.6 SCHEDULE FOR CLOSURE [I-1f]

Closure of LERF and ETF is not anticipated to occur within the next 30 years. The actual year of closure will depend on the time required for current waste to be processed and what role the LERF and ETF will play in processing additional waste generated during future activities in the 200 Areas. Other factors affecting the year of closure include changes in operational requirements, lifetime extension upgrades, and unforseen factors. When a definite closure date is established, a revised closure plan will be submitted to Ecology.

The activities required to complete closure are planned to be accomplished within 180 days. Should a modified schedule be necessary, a revised schedule will be presented and agreed to before closure.

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12.0 REPORTING AND RECORDKEEPING 12-1

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12.0 REPORTING AND RECORDKEEPING

Reporting and recordkeeping requirements that could be applicable to the Hanford Facility are described in Chapter 12.0 of the General Information Portion (DOE/RL-91-28). Not all of these requirements and associated reports and records identified in Chapter 12.0 of the General Information Portion are applicable to the LERF and the ETF. Those reporting and recordkeeping requirements determined to be applicable to the LERF and the ETF are summarized as follows:

- Hanford Facility Contingency Plan and incident records (as identified in the General Information Portion):
  - Immediate reporting
  - Written reporting
  - Shipping paper discrepancy reports.
- Unit-specific Part B permit application documentation and associated plans
- Personnel training records
- Groundwater monitoring records
- Inspection records (unit)
- Onsite transportation documentation
- Land disposal restriction records
- Waste minimization and pollution prevention.

In addition, the following reports prepared for the Hanford Facility will contain input, when appropriate, from the LERF and the ETF:

- Quarterly Hanford Facility RCRA Permit modification report
- Anticipated noncompliance
- Required annual reports.

Annual reports updating projections of anticipated costs for closure and postclosure will be submitted when the LERF and the ETF closure plan is submitted to Ecology (Chapter 11.0).

The LERF and the ETF Operating Record 'records contact' is kept on file in the General Information file of the Hanford Facility Operating Record (refer to DOE/RL-91-28, Chapter 12.0).

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13.0 OTHER FEDERAL AND STATE LAWS [J] 13-1

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13.0 OTHER FEDERAL AND STATE LAWS [J]

Applicable federal, state, and local laws applicable to the LERF and the ETF are discussed in Chapter 13.0 of the General Information Portion (DOE/RL-91-28). Generally, the laws applicable to the LERF and the ETF include, but might not be limited to, the following:

Atomic Energy Act of 1954
Federal Facility Compliance Act of 1992
Clean Air Act of 1977
Safe Drinking Water Act of 1974
Emergency Planning and Community Right-to-Know Act of 1986
Toxic Substances Control Act of 1976
National Historic Preservation Act of 1966
Endangered Species Act of 1973
Fish and Wildlife Coordination Act of 1934
Federal Insecticide, Fungicide, and Rodenticide Act of 1975
Hazardous Materials Transportation Act of 1975
National Environmental Policy Act of 1969
Washington Clean Air Act of 1967
Washington Water Pollution Control Act of 1945
Washington Pesticide Control Act of 1971
New Source Construction Permits
Model Toxics Control Act
Benton Clean Air Authority Regulation 1
State Environmental Policy Act of 1971.

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CONTENTS

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APPENDIX 3A

WASTE ANALYSIS PLAN FOR LIQUID EFFLUENT RETENTION FACILITY AND 200 AREA EFFLUENT TREATMENT FACILITY

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METRIC CONVERSION CHART

Into metric units			Out of metric units		
If you know	Multiply by	To get	If you know	Multiply by	To get
Length			Length		
inches	25.40	millimeters	millimeters	0.0393	inches
inches	2.54	centimeters	centimeters	0.393	inches
feet	0.3048	meters	meters	3.2808	feet
yards	0.914	meters	meters	1.09	yards
miles	1.609	kilometers	kilometers	0.62	miles
Area			Area		
square inches	6.4516	square centimeters	square centimeters	0.155	square inches
square feet	0.092	square meters	square meters	10.7639	square feet
square yards	0.836	square meters	square meters	1.20	square yards
square miles	2.59	square kilometers	square kilometers	0.39	square miles
acres	0.404	hectares	hectares	2.471	acres
Mass (weight)			Mass (weight)		
ounces	28.35	grams	grams	0.0352	ounces
pounds	0.453	kilograms	kilograms	2.2046	pounds
short ton	0.907	metric ton	metric ton	1.10	short ton
Volume			Volume		
fluid ounces	29.57	milliliters	milliliters	0.03	fluid ounces
quarts	0.95	liters	liters	1.057	quarts
gallons	3.79	liters	liters	0.26	gallons
cubic feet	0.03	cubic meters	cubic meters	35.3147	cubic feet
cubic yards	0.76456	cubic meters	cubic meters	1.308	cubic yards
Temperature			Temperature		
Fahrenheit	subtract 32 then multiply by 5/9ths	Celsius	Celsius	multiply by 9/5ths, then add 32	Fahrenheit
Force			Force		
pounds per square inch	6.895	kilopascals	kilopascals	1.4504×10^{-4}	pounds per square inch

Source: *Engineering Unit Conversions*, M. R. Lindeburg, PE., Second Ed., 1990, Professional Publications, Inc., Belmont, California.

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1.0 INTRODUCTION

In accordance with the federal and state regulations set forth in 40 Code of Federal Regulations (CFR) 264.13 and in Washington State Department of Ecology (Ecology) *Dangerous Waste Regulations*, Washington Administrative Code (WAC) 173-303-300, this waste analysis plan (WAP) has been prepared for operation of the Liquid Effluent Retention Facility (LERF) and the 200 Area Effluent Treatment Facility (ETF) located in the 200 East Area on the Hanford Site, Richland, Washington.

The Permittees shall comply with all the requirements, subsections, figures, tables, and appendices, included in the "Waste Analysis Plan for Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility, except that the "Wastewater Profile Sheet Form" is included as an example only. The actual Wastewater Profile Sheet format may vary, but will contain the same substantive information as the example form.

The purpose of this WAP is to document the sampling and analytical methods, and describe the procedures which are utilized for all dangerous wastes that are managed in the specific treatment storage, and disposal (TSD) units identified in the Part A, Form 3, permit application for the LERF and the ETF (DOE/RL-97-03). This WAP also documents the requirements for generators of aqueous wastes that will be sent to the LERF or ETF for treatment. Throughout this WAP, the term generator includes any Hanford Site unit, including TSD units, whose process produces an aqueous waste.

The TSD units include a surface impoundment (LERF), which provides treatment and storage, a tank system at the ETF, which provides treatment and storage, and a container management area at the ETF, which provides drum storage and treatment. Additionally, this WAP discusses the sampling and analytical methods the treated effluent (treated aqueous waste) that is discharged from the ETF as a non-dangerous, delisted waste to the State-Approved Land Disposal Site (SALDS). Specifically, the WAP delineates the following:

- Influent Waste Acceptance Process - determines the acceptability of a particular aqueous waste at the LERF or ETF pursuant to applicable permit conditions, regulatory requirements, and operating capabilities prior to acceptance of the waste at the LERF or ETF for treatment or storage. See Section 2.0.

- Special Management Requirements - identifies the special management requirements for aqueous wastes managed in the LERF or ETF. See Section 3.0.

- Influent Aqueous Waste Sampling and Analysis - describes influent sampling and analyses used to characterize an influent aqueous waste to ensure proper management of the waste and for compliance with the special management requirements. Also includes rationale for analyses. See Section 4.0.

- Treated Effluent Sampling and Analysis - describes sampling and analyses of treated effluent (i.e., treated aqueous waste) for compliance with State Waste Discharge Permit (Ecology 1995a) and Final Delisting [40 CFR 261, Appendix IX, Table 2 (EPA, 1995)] limits. Also includes rationale for analyses. See Section 5.0.

- ETF Generated Waste Sampling and Analysis - describes the sampling analyses used to characterize the secondary waste streams generated from the treatment process and to characterize waste generated from maintenance and operations activities. Also includes rationale for analyses. See Section 6.0.

- Quality Assurance and Quality Control - ensures the accuracy and precision of sampling and analysis activities. See Section 7.0.

This WAP is designed to meet the specific requirements of the following:

- Land Disposal Restrictions Treatment Exemption for the LERF under 40 CFR 268.4, U.S. Environmental Protection Agency, December 6, 1994 (Appendix C)
- Final Delisting for the ETF, 40 CFR 261, Appendix IX, Table 2 (EPA 1995)
- Washington State Waste Discharge Permit, No. ST 4500, as amended, (Ecology 1995a)
- *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Hanford Facility Permit WA7890008967, September 28, 1994 (Ecology 1994).

This plan also was designed to include the specific elements of a WAP, as identified in the *Dangerous Waste Permit Application Requirements* (Ecology 1996a). Groundwater monitoring is addressed in separate plans. A copy of this WAP will be available at the ETF at all times.

Throughout this WAP, reference is made to radioactive waste. Although the treatment and storage of radioactive waste (i.e., source, special nuclear, and by-product materials as defined by the *Atomic Energy Act of 1954*) are not within the scope of the *Resource Conservation and Recovery Act* (RCRA) *of 1976*, as amended or WAC 173-303, information is provided for general knowledge where appropriate. Additionally, the conditions of the Washington State Discharge Permit, No. ST 4500 (Discharge Permit) are included in this WAP for completeness, though they also are not within the scope of RCRA or WAC 173-303. Therefore, revisions of this WAP that are not governed by the requirements of WAC 173-303 will not be considered as a modification subject to review or approval by Ecology. However, any revisions to this WAP will be incorporated into the Hanford Dangerous Waste Permit at least annually through the modification process.

1.1 LIQUID EFFLUENT RETENTION FACILITY AND EFFLUENT TREATMENT FACILITY DESCRIPTION

The LERF and ETF comprise an aqueous waste treatment system located in the 200 East Area (Figure 1-1). Both LERF and the ETF may receive aqueous waste through several inlets. The ETF generally receives aqueous waste directly from the LERF. However, aqueous waste also can be transferred from the Load-In Station to the ETF. The Load-In Station is located just east of the ETF and currently consists of two 37,854-liter storage tanks and a pipeline that connects to either LERF or the ETF through fiberglass pipelines with secondary containment.

The LERF can receive aqueous waste through four inlets. First, aqueous waste can be transferred to LERF through a pipeline from the 200 West Area. Second, aqueous waste can be transferred through a pipeline that connects LERF with the 242-A Evaporator. Third, aqueous waste also can be transferred to LERF from a pipeline that connects LERF to the Load-In Station at the ETF. Finally, aqueous waste can be transferred into LERF through a series of sample ports located at each basin.

The LERF consists of three lined surface impoundments with a nominal capacity of 29.5 million liters each. Aqueous waste from LERF is pumped to the ETF through a double-walled fiberglass pipeline. The pipeline is equipped with leak detection located in the annulus between the inner and outer pipes. Each basin is equipped with six available sample risers constructed of 6-inch-perforated pipe. A seventh sample riser in each basin is dedicated to influent waste receipt piping, and an eighth riser in each basin contains liquid level instrumentation. Each riser extends along the sides of each basin from the top to the bottom of the basin. Detailed information on the construction and operation of the LERF is provided in Chapter 4.0

of the *Hanford Facility Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility* (DOE/RL-97-03).

The ETF was designed to treat the contaminants anticipated in process condensate (PC) from the 242-A Evaporator and other aqueous wastes from the Hanford Site. Section 1.2 provides more information on the sources of these wastes.

The capabilities of the ETF were confirmed through pilot plant testing. A pilot plant was used to test surrogate solutions that contained constituents of concern anticipated in aqueous wastes on the Hanford Site. The pilot plant testing served as the basis for a demonstration of the treatment capabilities of the ETF in the *200 Area Effluent Treatment Facility Delisting Petition* (DOE/RL-92-72). The pilot plant test data also were used to establish that the ETF provides 'best available treatment and all known, available, and reasonable methods of treatment' (BAT/AKART), as required in the permitting of the ETF under the state water quality and wastewater discharge permit regulations (WAC 173-200 and WAC 173-216, respectively).

The ETF consists of a primary and a secondary treatment train (Figure 1-2). The primary treatment train removes or destroys dangerous and mixed waste components from the aqueous waste. In the secondary treatment train, the waste components are concentrated and dried into a powder. This waste is containerized, and transferred to a waste treatment, storage, and/or disposal (TSD) unit.

Each treatment train consists of a series of operations. The primary treatment train includes the following:

- Surge tank
- Rough filter
- Ultraviolet light oxidation (UV/OX)
- pH adjustment
- Hydrogen peroxide decomposer
- Fine filter
- *Degasification*
- Reverse osmosis (RO)
- Polisher [ion exchange (IX) column]
- Final pH adjustment and verification.

The secondary treatment train uses the following systems:

- *Secondary waste receiving tanks*
- Evaporator (mechanical vapor recompression)
- Concentrate tank
- Thin film dryer
- Container handling
- Supporting systems.

A dry powder waste is generated from the secondary treatment train, from the treatment of an aqueous waste. The secondary waste treatment system typically receives and processes by-products generated from the primary treatment train. However, in an alternate operating scenario, some aqueous wastes may be fed to the secondary treatment train before the primary treatment train. Detailed information on the treatment trains and the unit operations is provided in Chapter 4.0 of the dangerous waste permit application for the LERF and ETF (DOE/RL-97-03).

The treated effluent is contained in verification tanks where the effluent is sampled to confirm that the effluent meets the 'delisting' criteria. Under 40 CFR 261, Appendix IX, Table 2, the treated effluent from

the ETF is considered a delisted waste; that is, the treated effluent is no longer a dangerous or hazardous waste subject to the hazardous waste management requirements of RCRA. The treated effluent is discharged under the Discharge Permit as a nondangerous, delisted waste to the SALDS, located in the 600 Area, north of the 200 West Area (Figure 1-1). Some delisted wastewater is recycled in the treatment process. Verification tank water is used to dilute bulk acid and caustic to meet processing needs reducing the demand for process water.

1.2 SOURCES OF AQUEOUS WASTE

The ETF was intended and designed to treat a variety of radioactive and/or aqueous mixed wastes. However, during the initial phases of developing the dangerous waste permit application for the LERF and ETF, PC from the 242-A Evaporator was the only mixed waste identified for storage and treatment in the LERF and the ETF. As cleanup activities at Hanford progress, many of the aqueous wastes generated from site remediation and waste management activities will be sent to the LERF and ETF for treatment and storage.

The PC is a dangerous waste because it is derived from a listed, dangerous waste stored in the Double-Shell Tank (DST) System and because of the ammonia content. The DST waste is transferred to the 242-A Evaporator where the waste is concentrated through an evaporation process. The concentrated slurry waste is returned to the DST System, and the evaporated portion of the waste is recondensed, collected, and transferred as PC to the LERF.

Other aqueous wastes that will be treated and stored at the LERF and ETF include, but are not limited to the following Hanford wastes: contaminated groundwater from pump-and-treat remediation activities such as groundwater from the 200-UP-1 Operable Unit; water from deactivation activities such as water from the spent fuel storage basins at deactivated reactors (e.g., N Reactor); laboratory aqueous waste from unused samples and sample analyses; and leachate from landfills, such as the Environmental Restoration Disposal Facility.

Most of these aqueous wastes will be accumulated in batches in a LERF basin for interim storage and treatment through pH and flow equalization before final treatment in the ETF. However, some aqueous wastes, such as 200-UP-1 Groundwater, may flow through LERF en route to the ETF for final treatment. The constituents in these aqueous wastes are common to the Hanford Site and were considered in pilot plant testing or in vendor tests, either as a constituent or as a family of constituents.

Some of the aqueous wastes could contain tritium, a radioactive isotope of hydrogen. Because there is no economically, viable treatment technology available to remove tritium, tritium is not reduced in the treated effluent discharged to the SALDS.

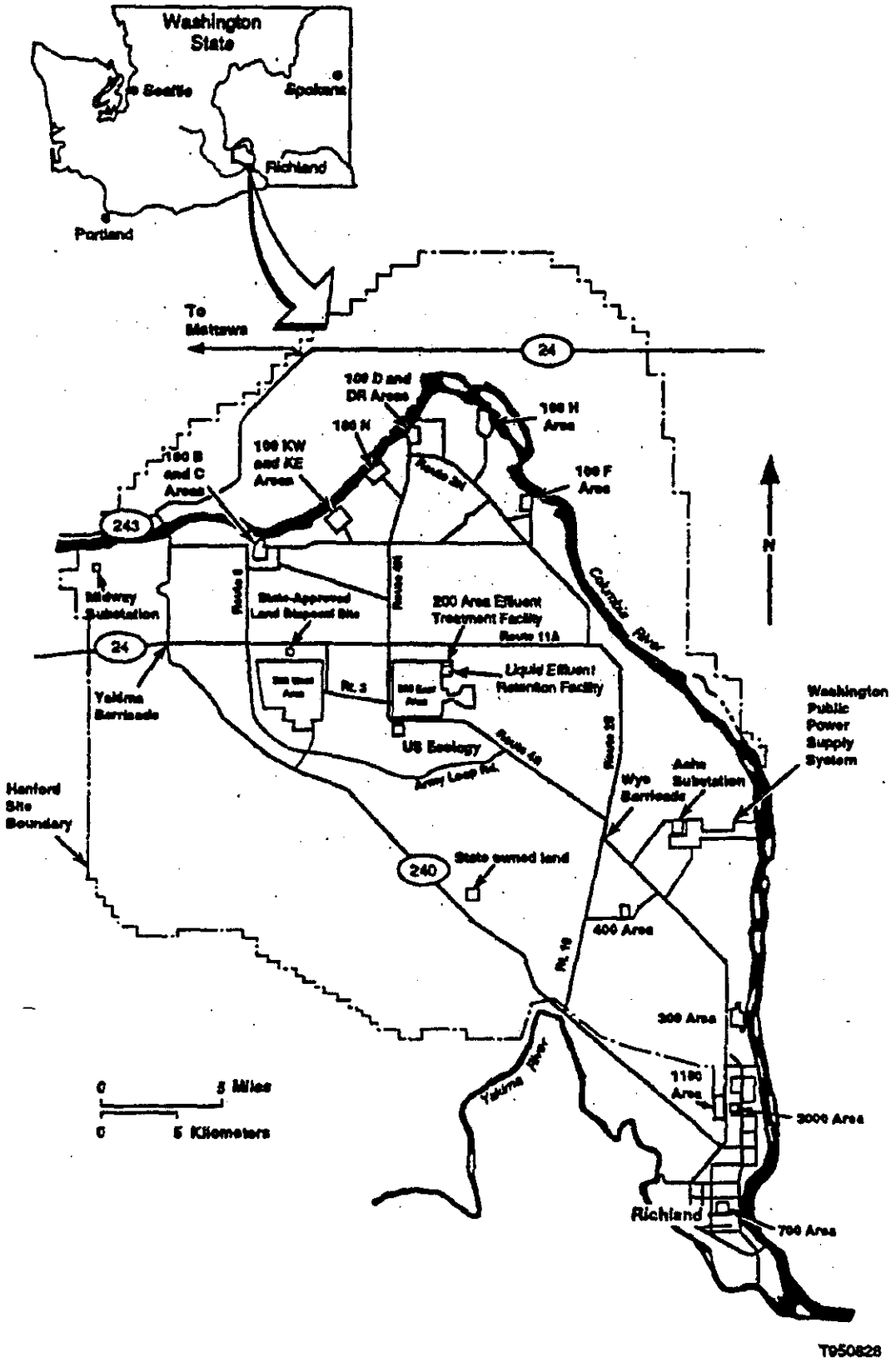

Figure 1-1. Location of the Liquid Effluent Retention Facility, the 200 Area Effluent Treatment Facility, and the State-Approved Land Disposal Site.

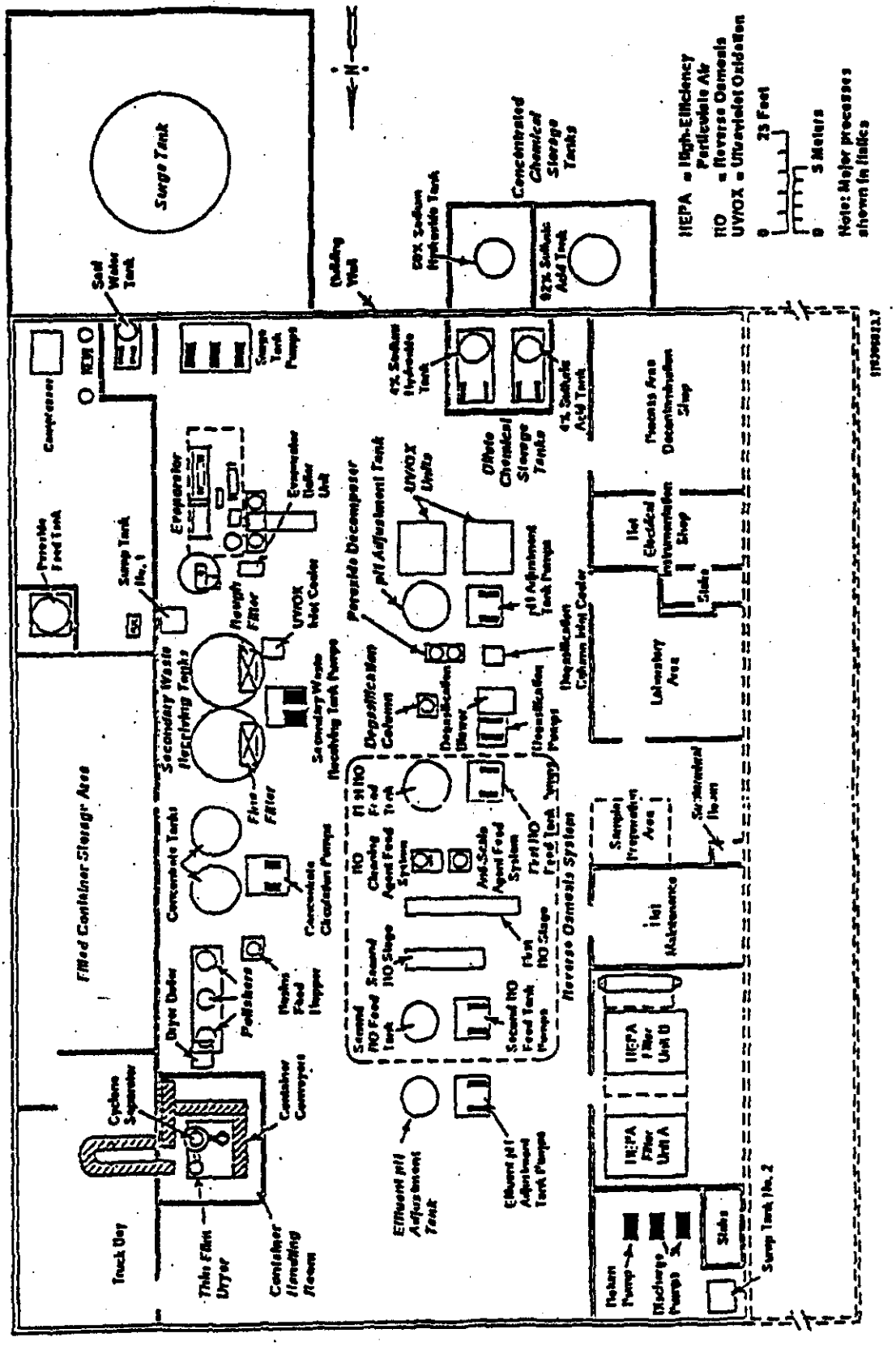

Figure 1-2. 200 Area Effluent Treatment Facility Floor Plan.

2.0 INFLUENT WASTE ACCEPTANCE PROCESS

Throughout the acceptance process, there are certain criteria that must be met for an influent waste (i.e., aqueous waste) to be accepted. These criteria are identified in the following sections and summarized in Table 2-2. It should be noted that if an aqueous waste initially does not meet these criteria, it is not necessarily rejected. In many instances, the ETF process or the LERF and ETF permits can be modified to accommodate the treatment and storage of that waste. A discussion of the re-evaluation process is provided in Section 2.3.

The first step in the waste acceptance process is for the generator to provide information on the influent waste stream. At this stage, the generator will work with LERF/ETF personnel to define what information must be provided to determine the acceptability of an aqueous waste for the treatment, storage, or disposal at the LERF and the ETF. At a minimum, the information required by WAC 173-303-300(2) will be obtained, which includes sampling and analysis of the aqueous waste stream. The LERF/ETF management will evaluate, on a case-by-case basis, whether the aqueous waste stream is acceptable for storage and treatment. The waste acceptance process contains the following steps.

Acceptance Process is performed as follows.

- Waste information--the generator of an aqueous waste works with LERF/ETF personnel to provide detailed information on the waste stream, i.e., a waste characterization.

- Waste management decision process--LERF/ETF management decision is based on a case-by-case evaluation of whether an aqueous waste stream is acceptable for treatment or storage, or whether to reject a stream. In addition, any special management practices required for an accepted stream may be specified at this time. The evaluation is divided into two categories.

  - Regulatory acceptability--a review to determine if there are any regulatory concerns that would prohibit the storage or treatment of an aqueous waste in the LERF or ETF; e.g., treatment would meet permit conditions that would be in compliance with applicable regulations.

  - Operational acceptability--an evaluation to determine if there are any operational concerns that would prohibit the storage or treatment of an aqueous waste in the LERF or ETF; e.g., determine treatability and compatibility or safety considerations.

  Specific waste acceptance criteria are defined within the individual discussions on regulatory and operational acceptability.

Re-evaluation Process is performed to ensure the characterization is accurate and current. This process also provides a mechanism for re-evaluating an aqueous waste stream that does not meet the waste acceptance criteria.

Record Information/Decision Process--provides that information used in the decision, the evaluation, and the decision are documented as part of the ETF Operating Record.

2.1 ACCEPTANCE PROCESS

When an aqueous waste stream is identified for treatment or storage in the LERF or ETF, the generator is required to characterize the waste and document the characterization on an aqueous waste profile sheet (WPS). This requirement is the first waste acceptance criterion. The LERF and the ETF personnel work

with the generators to ensure that the necessary information is collected for the characterization of a waste stream (i.e., the appropriate analyses or adequate process knowledge), and that the information provided on the WPS is complete. The completed WPS is maintained at the ETF.

2.1.1 Waste Characterization

Because the constituents in the individual aqueous waste streams vary, each stream is characterized and evaluated for acceptability on a case-by-case basis. The generator is required to designate an aqueous waste, which generally will be backed up by analytical data. However, a generator may use process knowledge to substantiate the waste designation, or for general characterization information. Examples of acceptable process knowledge include the following:

- Documented data or information on processes similar to that which generated the aqueous waste stream
- Information/documentation that dangerous waste constituents are from specific, well documented processes, e.g., F-listed wastes
- Information/documentation that sampling/analyzing a waste stream would pose health and safety risks to personnel
- Information/documentation that the waste does not lend itself to collecting a laboratory sample.

When a generator submits process knowledge for the characterization of a dangerous and/or mixed waste stream, the process knowledge is reviewed by LERF and ETF personnel as part of the waste acceptance process. Specifically, LERF and ETF personnel review the generator's processes to verify the integrity of the process knowledge, and determine whether the process knowledge is current and consistent with current regulations. The final decision on the adequacy of the process knowledge is determined by LERF/ETF management or their designee. The persons reviewing generator process knowledge and those making decisions on the adequacy of process knowledge are trained according to the requirements of the Dangerous Waste Training Plan [Chapter 8.0 of the dangerous waste permit application for the LERF and ETF (DOE/RL-97-03)].

The generator is also responsible for identifying those Land Disposal Restrictions (LDR) that would be applicable to the influent aqueous waste as part of the characterization, as require under 40 CFR 268.40 and WAC 173-303-140. Because the ETF is a Clean Water Act - equivalent TSD unit (40 CFR 268.37(a)), the generator is not required to identify the underlying hazardous constituents (40 CFR 286.48).

When analyzing an aqueous waste stream for characterization, a generator is required to use the target list of parameters identified in Table 4-1 (Section 4.0). The corresponding analytical methods are provided in Appendix B. The generator may use process knowledge in lieu of some analyses, as determined by LERF/ETF management or their designee, if the process knowledge is adequate (as described above). For example, if a generator provides information that the process generating an aqueous waste does not include or involve organic chemicals, analyses for organic compounds likely would not be required. Additional analyses could be required if historical information and/or process knowledge indicate that an aqueous waste contains constituents not included in the target list of parameters.

The LERF and ETF personnel will work with the generator to determine which analyses are appropriate for the characterization. This approach ensures that the waste analyses adequately characterize the aqueous waste and defines the constituents of concern in a cost effective manner. The characterization and historical information are documented in the WPS, which is discussed in the following section.

2.1.2 Aqueous Waste Profile Sheet

The WPS documents the characterization of each new aqueous waste stream. The profile includes a detailed description of the volume, source, regulatory history, and the chemical and physical nature of the aqueous waste. For an aqueous waste to be accepted for treatment or storage in the LERF or the ETF, each new waste stream generator is required to complete and provide this form to LERF and ETF. Each generator also is required to provide the analytical data and process knowledge used to designate the aqueous waste stream, and to determine the chemical and physical nature of the waste. An example of a typical WPS is provided in Appendix A. This form could be modified to accommodate changes in regulations, operational concerns at the LERF or ETF, Hanford Facility needs, or other needs. However, the basic elements of the example form (e.g., waste source information) will be maintained in any future revision.

The LERF and the ETF management determine whether the information on the WPS is sufficient. The LERF and ETF management use this information to evaluate the acceptability of the aqueous waste for storage and treatment in the LERF and the ETF, and to determine if the aqueous waste can be handled properly.

2.2 WASTE MANAGEMENT DECISION PROCESS

All aqueous waste under consideration for acceptance must be characterized using analytical data and process knowledge. This information is used to determine the acceptability of an aqueous waste stream. The LERF and ETF Facility Manager or their designee is responsible for making the decision to accept or reject an aqueous waste stream. The management decision to accept any aqueous waste stream is based on an evaluation of regulatory acceptability and operational acceptability. Each evaluation uses acceptance criteria, which were developed to ensure that an aqueous waste is managed in a safe, environmentally sound and compliant manner. The following sections provide detail on the acceptance evaluation and the acceptance criteria.

In many instances, an aqueous waste that does not meet one of the waste acceptance criteria is not necessarily rejected. Section 2.3 discusses the process for re-evaluating an aqueous waste that does not initially meet the waste acceptance criteria. However, the final decision to reject an aqueous waste is made by LERF and ETF management. An aqueous waste stream could be rejected for one of the following reasons:

- The paperwork and/or laboratory analyses from the generator are insufficient
- Discrepancies with the regulatory and operational acceptance criteria cannot be reconciled, including:
  - An aqueous waste is not allowed under the current Discharge Permit or Final Delisting, and LERF/ETF management elect not to pursue an amendment, or the permit and Delisting cannot be amended (Section 2.2.1)
  - An aqueous waste is incompatible with LERF liner materials or with other aqueous waste in LERF and no other management method is available (2.2.2).
- Adequate storage or treatment capacity is not available.

2.2.1 Regulatory Acceptability

Each aqueous waste stream is evaluated on a case-by-case basis to determine if there is any regulatory concerns that would preclude the storage or treatment of a waste in the LERF or the ETF. Before an aqueous waste can be treated in either the LERF of the ETF, the regulatory history must be determined. Information on the regulatory history of an aqueous waste is documented in the WPS. This information is used to confirm that treating or storing the aqueous waste in the LERF or the ETF is allowed under and in compliance with WAC 173-303, dangerous waste permit application for the LERF and ETF, the Final Delisting for the ETF, and the Discharge Permit for the ETF.

2.2.1.1 Dangerous Waste Regulations/Permits

Before an aqueous waste stream is sent to the LERF or the ETF, the generator will characterize and designate the stream with the appropriate dangerous/hazardous waste numbers according to WAC 173-303-070. The Part A, Form 3, permit applications for the LERF and the ETF, and the Final Delisting for the ETF identify the specific waste numbers for dangerous/mixed waste that can be managed in the LERF and the ETF. Dangerous waste designated with waste numbers not specified in the Part A, Form 3, permit applications cannot be treated or stored in the LERF or the ETF, until the Part A, Form 3, permit application is modified.

Additionally, aqueous wastes designated with listed waste numbers identified in the Final Delisting will be managed in accordance with the conditions of the delisting, or an amended delisting. Accordingly, the acceptance criteria in this evaluation are satisfied through compliance with the Part A, Form 3, permit applications and the Final Delisting.

2.2.1.2 State Waste Permit Regulations/Permit

Compliance with the Discharge Permit constitutes another waste acceptance criterion. In accordance with the conditions of the Discharge Permit, the constituents of concern in each new aqueous waste stream must be identified. The regulatory history and characterization data provided by the generator are used to identify these constituents. A constituent of concern, under the conditions of the Discharge Permit, in an aqueous waste stream is defined as any contaminant with a maximum concentration greater than one of the following:

- Any limit in the Discharge Permit (Ecology 1995a)
- Groundwater Quality Criteria (WAC 173-200)
- Final Delisting levels (EPA 1995)
- Background groundwater concentrations as measured at the ETF disposal site.

The conditions of the Discharge Permit also require a demonstration that the ETF can treat the constituents of concern to below discharge limits.

2.2.2 Operational Acceptability

Because the operating configuration or operating parameters at the LERF and ETF can be adjusted or modified, most aqueous waste streams generated on the Hanford Site can be effectively treated to below Delisting and Discharge Permit limits. Because of this flexibility, it would be impractical to define numerical acceptance or decision limits. Such limits would constrain the acceptance of appropriate

aqueous waste streams for treatment at the LERF and ETF. The versatility of the LERF and ETF is better explained in the following examples:

- The typical operating configuration of the ETF is to process an aqueous waste through the UV/OX unit first, followed by the RO unit. However, high concentrations of nitrates may interfere with the performance of the UV/OX. In this case, the ETF could be configured to process the waste in the RO unit prior to the UV/OX unit.

- For a small volume aqueous waste with high concentrations of some anions and metals, the approach may be to first process the waste stream in the secondary treatment train. This approach would prevent premature fouling or scaling of the RO unit. The liquid portion (i.e., untreated overheads from the ETF evaporator and thin-film dryer) would be send to the primary treatment train.

- An aqueous waste with high concentrations of chlorides and fluorides may cause corrosion problems when concentrated in the secondary treatment train. One approach is to adjust the corrosion control measures in the secondary treatment train. An alternative may be to blend this aqueous waste in a LERF basin with another aqueous waste, which has sufficient dissolved solids, such that the concentration of the chlorides in the secondary treatment train would not pose a corrosion concern.

- Some metal salts (e.g., barium sulfate) tend to scale the RO membranes. In this situation, descalants used in the treatment process may be increased.

- Any effluent that does not meet these limits in one pass through the ETF treatment process is recycled to the ETF for re-processing.

There are, however, some aqueous wastes whose chemical and physical properties would preclude that waste from being treated or stored at the LERF or ETF. Accordingly, an aqueous waste is evaluated to determine if it is treatable, if it would impair the efficiency or integrity of the LERF or ETF, and if it is compatible with materials in these units. This evaluation also determines if the aqueous waste is compatible with other aqueous wastes(s) managed in the LERF.

The waste acceptance criteria in this category focus on determining treatability of an aqueous waste stream, and on determining any operational concerns that would prohibit the storage or treatment of an aqueous waste stream in the LERF or the ETF. The chemical and physical properties of an aqueous waste stream are determined as part of the waste characterization, and are documented on the WPS and compared to the design of the units to determine whether an aqueous waste stream is appropriate for storage and treatment in the LERF and the ETF.

2.2.2.1 Treatability

The process of determining treatability involves two steps. The first step is to establish the treatment efficiencies for the constituents of concern in an influent aqueous waste. The treatment efficiencies must be sufficient such that the treated effluent will meet the Discharge Permit and Delisting limits. The pilot plant testing provided destruction and removal (i.e., treatment) efficiencies for most of the anticipated constituents in aqueous waste streams at the Hanford Site, and are documented in the *200 Area Effluent Treatment Facility Delisting Petition* (DOE/RL-92-72). Information or studies from the vendors of the individual treatment units studies may also be used on a case-by-case basis to develop treatment efficiencies for the ETF or for the individual treatment units. [Chapter 4.0 of the dangerous waste permit application for the LERF and ETF (DOE/RL-97-03) provides a detailed discussion of the individual treatment units.] Treatment efficiencies also may be determined or confirmed by ETF operating data.

The second step in determining treatability is to identify those physical and chemical properties in an aqueous waste that would interfere with, or foul the ETF treatment process. This step focuses on the potential of a waste stream to interfere with the destruction efficiency of organic compounds in the UV/OX system, rejection rates of the RO membranes, or foul the filtration systems. Generally, the operating parameters or operating configuration at the LERF or ETF can be adjusted or modified to accommodate these properties. However, in those cases where a treatment process or operating configuration cannot be modified, the aqueous waste stream will be excluded from treatment or storage at the LERF or ETF.

Additionally, an aqueous waste stream is evaluated for the potential to deposit solids in a LERF basin (i.e., an aqueous waste which contains sludge). This evaluation will also consider the whether blending or mixing two or more aqueous waste streams will result in the formation of a precipitate. However, because the waste streams managed in the LERF and ETF are generally dilute, the potential for mixing waste streams an forming a precipitate is low, no specific compatibility tests are performed. If necessary, filtration at the waste source could be required before acceptance into LERF.

To determine if an aqueous waste meets the criterion of treatability, specific information is required. Treatment efficiencies will be developed from characterization data provided by the generator. Generators will also provide characterization data to identify those physical and chemical properties that would interfere with, or foul the ETF treatment process. In some instances, process knowledge may be adequate to identify a chemical or physical property that would be of concern. For example, the generator could provide process knowledge that the stream has two phases (an oily phase and an aqueous phase). In this case, if the generator could not physically separate the two phases, the aqueous waste stream would be rejected because the oily phase could compromise some of the treatment equipment. Typically, analyses for the following parameters are required to evaluate treatability and operational concerns:

- total dissolved solids
- total organic carbon
- total suspended solids
- magnesium
- potassium
- barium
- nitrate
- sulfate
- manganese
- bromide
- gross beta
- specific conductivity
- pH
- calcium
- sodium
- silica
- iron
- chloride
- aluminum
- phosphate
- gross alpha
- gamma.

These constituents are identified in Table 2-2.

2.2.2.2 Compatibility

Corrosion Control. Because of the materials of construction used in the ETF, corrosion is generally not a concern with new aqueous waste streams. Additionally, these waste streams are managed in a manner that minimizes corrosion. To ensure that a waste will not compromise the integrity of the ETF tanks and process equipment, each waste stream is assessed for its corrosion potential as part of the compatibility evaluation. This assessment usually focuses on chloride and fluoride concentrations; however, the chemistry of each new waste also is evaluated for other parameters that could cause corrosion.

Compatibility with Liquid Effluent Retention Facility Liner and Piping. As part of the acceptance process, the criteria of compatibility with the LERF liner materials is evaluated for each aqueous waste stream. The evaluation for liner compatibility is documented as part of the waste acceptance process. The chemical

parameters or constituents considered for liner compatibility are identified in Table 2-1. The analytical methods for these parameters and constituents are provided in Appendix B.

The high-density polyethylene liners in the LERF basins potentially are vulnerable to the presence of certain constituents that might be present in some aqueous waste. Using EPA Method 9090 (EPA 1996), the liner materials were tested to evaluate compatibility between aqueous waste stored in the LERF and synthetic liner components. Based on the data from the compatibility test and vendor data on the liner materials, several constituents and parameters were identified as potentially harmful (at high concentrations) to the integrity of the liners. From these data and the application of safety factors, concentration limits in Table 2-1 were established.

Except for PC, the strategy for protecting the integrity of a LERF liner is to establish upfront that an aqueous waste is compatible before the waste is accepted into LERF. Characterization data on each new aqueous waste stream are compared to the limits outlined in Table 2-1 to ensure compatibility with the LERF liner material before acceptance into the LERF.

PC from each 242-A Evaporator campaign is sampled and analyzed, and the results compared to the limits in Table 2-1 to ensure continued compatibility with the liner. Additionally, before a waste stream is processed at the 242-A Evaporator, DST analytical data are reviewed and administrative and process controls developed and implemented to ensure that PC is compatible with the LERF liner. For flow-through aqueous wastes like the 200-UP-1 Groundwater, characterization data will be reviewed quarterly to ensure that liner compatibility is maintained.

In some instances, process knowledge may be adequate to determine that an aqueous waste is compatible with the LERF liner. In those instances where process knowledge is adequate, the waste characterization would likely not require analysis for these parameters and constituents.

Compatibility with Other Waste. Some aqueous wastes, especially small volumes, are accumulated in the LERF with other aqueous waste. Before acceptance into the LERF, the aqueous waste stream is evaluated for its compatibility with the resident aqueous waste(s). The evaluation focuses on the potential for an aqueous waste to react with another waste (40 CFR 264, Appendix V, "Examples of Potentially Incompatible Wastes"). Though the potential for problems associated with commingling aqueous wastes is very low, this evaluation confirms the compatibility of two or more aqueous wastes from different sources. No specific analytical test for compatibility is performed.

If it is determined that an aqueous waste stream is incompatible with other aqueous waste streams, alternate management scenarios are available. For example, another LERF basin that contains a compatible aqueous waste(s) might be used, or the aqueous waste stream might be fed directly into the ETF for treatment. In any case, potentially incompatible waste streams are not mixed, and all aqueous waste is managed in a way that precludes a reaction, degradation of the liner, or interference with the ETF treatment process.

2.3 RE-EVALUATION PROCESS

In accordance with 40 CFR 264.13 and WAC 173-303-300(4)(a), an influent aqueous waste will be re-evaluated as necessary to ensure that the characterization is accurate and current. At a minimum, an aqueous waste stream will be re-evaluated in the following situations.

- The LERF and the ETF management have been notified, or have reason to believe that the process generating the waste has changed.

- The LERF and the ETF management notes a increase or decrease in the concentration of a constituent in an aqueous waste stream, beyond the range of concentrations that was described or predicted in the waste characterization.

In these situations, LERF and ETF management will review the available information. If existing analytical information is not sufficient, the generator may be asked to review and update the current waste characterization, to supply a new WPS, or re-sample and re-analyze the aqueous waste, as necessary. Other situations that might require a re-evaluation of a waste stream are discussed in the following sections.

2.3.1 Re-Evaluation for Aqueous Wastes not Meeting Waste Acceptance Criteria

An aqueous waste that does not meet one of the acceptance criteria is not necessarily rejected. Several options are available in the event that an aqueous waste is not acceptable following an initial evaluation. For example, a more extensive evaluation could be required to determine if the ETF process can be modified to treat an aqueous waste to required discharge levels. Additionally, a more extensive evaluation might be required to determine if a modification of the Discharge Permit or the Final Delisting is required and is feasible (e.g., to treat waste with new listed waste numbers).

2.3.2 Re-Evaluation for Treated Effluent not Meeting 200 Area Effluent Treatment Facility Permit Limits

If the treated effluent does not meet the Discharge Permit and Delisting limits in one pass through the ETF treatment process, the acceptability of the influent aqueous waste would be re-evaluated. This situation generally would apply to large volumes of aqueous waste (such as 200-UP-1 Groundwater) or to aqueous waste that is sent to the LERF or the ETF in batches on some frequency (such as monthly transfers of an aqueous waste). Small volumes of aqueous waste generally would be reprocessed until permit limits are met.

2.3.3 Re-Evaluation Requirements for Flow-Through Aqueous Waste

Aqueous waste like the 200-UP-1 Groundwater is unique because of the constant-flow source, and because the waste is pumped into a LERF basin throughout the lifetime of the pump-and-treat remediation activity. Also, rather than being accumulated in the LERF in a batch mode, this aqueous waste will generally flow through the LERF to the ETF for final treatment. Though this aqueous waste has been characterized upfront for acceptability, special sampling and analysis requirements must be met during the pump-and-treat operation to ensure that it continues to meet acceptance criteria.

Accordingly, flow-through wastes like the 200-UP-1 Groundwater are, and will be sampled quarterly to update the initial characterization. This on-going characterization is monitored by the LERF and the ETF personnel. If the data from a sampling event suggest that contaminant concentrations have increased beyond that described in the initial characterization, the acceptability of the waste stream will be re-evaluated. Details on the sampling and analysis of flow-through aqueous waste, like the 200-UP-1 Groundwater, are provided in Section 4.0.

2.4 RECORD/INFORMATION AND DECISION

The information and data collected throughout the acceptance process, and the evaluation and decision on whether to accept an influent aqueous waste stream for treatment or storage in the LERF or the ETF are documented as part of the ETF Operating Record, which is maintained at the ETF. Specifically, the Operating Record contains the following components on a new influent aqueous waste stream:

- The signed WPS for each aqueous waste stream and analytical data
- Process knowledge used to characterize a dangerous/mixed waste (under WAC 173-303), and information supporting the adequacy of the process knowledge
- The evaluation on whether an aqueous waste stream meets the waste acceptance criteria, including:
  - The evaluation for regulatory acceptability including appropriate regulator approvals
  - the evaluation for liner compatibility and for compatibility with other aqueous waste.

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Table 2-1. General Limits for Liner Compatibility.

Chemical Family	Constituent(s) or Parameter(s)[a]	Limit (mg/L)[b] (sum of constituent concentrations)
Alcohol/glycol	benzyl alcohol, 1-butanol	500,000
Alkanone[c]	acetone, 2-hexanone, methyl ethyl ketone, methyl isobutyl ketone, and 2-pentanone	200,000
Alkenone[d]	none targeted	NA
Aromatic/cyclic hydrocarbon	acetophenone, benzene, chlorobenzene, cresol, 1,4-dichlorobenzene, 2,4-dinitrotoluene, di-n-octyl phthalate, naphthalene, tetrahydrofuran, toluene, xylene	2000
Halogenated hydrocarbon	carbon tetrachloride, chloroform, 1,2-dichloroethane, 1,2-dichloroethene, 1,1-dichloroethylene, methylene chloride, tetrachloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, vinyl chloride	2000
Aliphatic hydrocarbon	hexachloroethane	500,000
Ether	2-butoxyethanol	2000
Other hydrocarbons	dimethylnitrosamine, tributyl phosphate	2000
Oxidizers	none targeted	NA
Acids, Bases, Salts	ammonium	100,000
pH	pH	0.5 < pH < 13.0

[a] Analytical methods for the parameters and constituents are provided in Appendix B.

[b] Analytical data for a chemical family (as indicated) are summed using the following 'sum of the fraction technique'. The individual constituent concentration, sum concentration (for families), and pH values for a waste stream are then evaluated against the compatibility limit.

$$\sum_{n=1}^{i}\left(\frac{\text{Conc}_n}{\text{LIMIT}_n}\right) \leq 1$$

where i is the number of organic constituents detected

[c] Ketone containing saturated alkyl group(s).

[d] Ketone containing unsaturated alkyl group(s).

mg/L = milligrams per liter.

Table 2-2. Waste Acceptance Criteria.

General criteria category	Criteria description
1. Characterization	A. Each generator must provide an aqueous waste profile.
	B. Each generator must designate the aqueous waste stream.
	C. Each generator must provide analytical data and/or process knowledge.
2. Regulatory acceptability	A. The LERF and ETF can store and treat influent aqueous wastes with waste numbers identified in the Part A, Form 3, permit applications for the LERF and the ETF, and the Final Delisting for the ETF.
	B. The aqueous waste must in compliance with conditions of the Discharge Permit.
3. Operational acceptability	A. Determine whether an aqueous waste stream is treatable, considering: 1. Whether the removal and destruction efficiencies on the constituents of concern will be adequate to meet Discharge Permit and Delisting levels. 2. Other treatability concerns; analyses for this evaluation may include: total dissolved solids, silica total organic carbon, potassium total suspended solids, sodium specific conductivity, barium calcium, nitrate magnesium, chloride manganese, phosphate bromide, sulfate gross alpha, gross beta gamma, iron aluminum
	B. Determine whether an aqueous waste stream is compatible, considering: 1. Whether an aqueous waste stream presents corrosion concerns; analysis may include chloride and fluoride 2. Whether an aqueous waste stream is compatible with LERF liner materials, compare characterization data to the liner compatibility limits (Table 2-1). 3. Whether an aqueous waste stream is compatible with other aqueous waste(s). (A 40 CFR 264 Appendix V type of comparison will be employed).

3.0 SPECIAL MANAGEMENT REQUIREMENTS

Special management requirements for aqueous wastes that are managed in the LERF or ETF are discussed in the following sections.

3.1 MONITORING THE VARIABILITY OF PROCESS CONDENSATE

The Discharge Permit (Ecology 1995a, Section S5) requires sampling of PC in the LERF basins until sufficient data are collected to adequately assess the variability of ammonia and total Kjeldahl nitrogen (TKN), strontium-90, and iodine-129. The PC will be analyzed for these parameters to assess the range of concentrations present in the PC and the results reported to Ecology. In addition, the 10 highest concentrations of tentatively identified compounds (TICs) will be reported from each PC sampling event, as required by the discharge permit. Tentatively identified compounds are non-targeted organic compounds or fragments of compounds with unique chromatographic spectra that are qualitatively identified by comparing them to standard databases of spectra. Because these compounds are identified qualitatively, their concentration only can be estimated.

Reports have been submitted to Ecology that included the results of ammonia and TKN analysis, detections of strontium-90 and iodine-129, and the 10 highest TICs. The data in these reports suggested that there is very little variability in the PC.

3.2 CONDITIONS ON PROCESS CONDENSATE FOR NEWLY IDENTIFIED WASTE NUMBERS

In January 1995, the U.S. Department of Energy, Richland Operations Office (DOE-RL) notified Ecology and the U.S. Environmental Protection Agency that small amounts of listed waste might have been introduced to the DST System, upstream of the LERF and the ETF. This listed waste previously had not been identified in the Dangerous Waste Part A, Form 3, permit applications for the DST System, LERF, or ETF. In a March 7, 1995 letter from Ecology to DOE-RL (Ecology 1995b), Ecology exercised its enforcement discretion with respect to the designation of this waste so long as several conditions are met. As long as these conditions are met, the waste numbers will not be included in the Part A, Form 3s, for the LERF or the ETF. These conditions only apply to PC. The constituent's vanadium, formate, and cyanide will be analyzed in the PC to meet these conditions.

3.3 LAND DISPOSAL RESTRICTION COMPLIANCE AT LIQUID EFFLUENT RETENTION FACILITY

Because LERF provides treatment through flow and pH equalization, a surface impoundment treatment exemption from the land disposal restrictions was granted in accordance with 40 CFR 268.4 (EPA 1994 and Ecology 1996b). This treatment exemption is subject to several conditions, including a requirement that the WAP address the sampling and analysis of the treatment 'residue' [40 CFR 268.4(a)(2)(i) and WAC 173-303-300(5)(h)(i) and (ii)] to ensure it meets applicable treatment standards. Though the term 'residue' is not specifically defined, this condition further requires that sampling must be designed to represent the "sludge and the supernatant" indicating that a residue may have a sludge (solid) and supernatant (liquid) component.

Solid residue is not anticipated to accumulate in a LERF basin for the following reasons:

- Aqueous waste streams containing sludge would not be accepted into LERF under the acceptance criteria of treatability (Section 2.2.2.1)
- No solid residue was reported from PC discharged to LERF in 1995
- The LERF basins are covered and all incoming air first passes through a breather filter
- No precipitating or flocculating chemicals are used in flow and pH equalization.

Therefore, the residue component subject to this condition is the supernatant (liquid component). As indicated above, solids are not anticipated to accumulate in a LERF basin. Additionally, an aqueous waste stream is evaluated for the potential to deposit solids in a LERF basin (i.e., an aqueous waste which contains sludge). If necessary, filtration at the waste source could be required before acceptance into LERF. The contingency for removal of solids will be addressed during closure [as indicated in the Closure Plan, Chapter 11.0 of the dangerous waste permit application for LERF and ETF (DOE/RL-97-03)].

The conditions of the treatment exemption also require that treatment residues (i.e., aqueous wastes), which do not meet the LDR treatment standards "must be removed at least annually" [40 CFR 268.4(a)(2)(ii)]. To address the conditions of this exemption, an influent aqueous waste is sampled and analyzed and the LDR status of the aqueous waste is established as part of the acceptance process. The LERF basins are then managed such that any aqueous waste(s) which exceeds an LDR standard is removed annually from a LERF basin, except for a heel of approximately 1 meter. A heel is required to stabilize the LERF liner. The volume of the heel is approximately 1.9 million liters.

4.0 INFLUENT AQUEOUS WASTE SAMPLING AND ANALYSIS

The following sections provide a summary of the sampling procedures, frequencies, and analytical parameters that will be used in the characterization of influent aqueous waste (Section 2.0) and in support of the special management requirements for aqueous waste in the LERF (Section 3.0).

4.1 SAMPLING PROCEDURES

With a few exceptions, generators are responsible for the characterization, including sampling and analysis, of an influent aqueous waste. PC is either sampled at the 242-A Evaporator or accumulated in a LERF basin following a 242-A Evaporator campaign and sampled. Flow-through aqueous wastes, such as the 200-UP-1 Groundwater, will be characterized before acceptance; however, these aqueous wastes will also be sampled at LERF quarterly. Other exceptions will be handled on a case-by-case basis and the operating record will be maintained at the unit for inspection by Ecology. The following section discusses the sampling locations, methodologies, and frequencies for these aqueous wastes. Aqueous waste generators are referred to WAC 173-303-110(2) (40 CFR 261, Appendix I) for the sampling procedures that are applicable to their waste. For samples collected at the LERF and ETF, unit-specific sampling protocol is followed. The sample containers, preservation materials, and holding times for each analysis are listed in Appendix B.

4.1.1 Batch Samples

In those cases where an aqueous waste is sampled in a LERF basin, samples are collected from four of the six available sample risers located in each basin, i.e., four separate samples. Though there are eight sample risers at each basin, one is dedicated to liquid level instrumentation and the other is dedicated as an influent port. Operating experience indicates that four samples adequately capture the variability of an aqueous waste stream. Specifically, sections of stainless steel (or other compatible material) tubing are inserted into the sample riser to an appropriate depth. Using a portable pump, the sample line is flushed with the aqueous waste and the sample collected. The grab sample containers typically are filled for volatile organic compounds (VOC) first, followed by the remainder of the containers for the other parameters.

Several sample ports are also located at the ETF, including a valve on the recirculation line at the ETF surge tank and a sample valve on a tank discharge pump line at the ETF Load-In Station. All samples are obtained at the LERF or ETF are collected in a manner consistent with SW-846 procedures (EPA 1986).

4.1.2 Flow-Through Samples at the Liquid Effluent Retention Facility

Flow-through samples are collected from a valve located at a transfer pipeline connection to the LERF. Samples of flow-through aqueous wastes, such as 200-UP-1 Groundwater, are collected quarterly or more frequently if there is change in the source (e.g., a change in the well-head), or if it is determined that there is an increase in the concentration of contaminants beyond the range described in the initial characterization. For flow-through grab samples, VOC sample containers are typically filled first, followed by the remainder of the containers for the other parameters.

4.2 ANALYTICAL RATIONALE

As stated previously, each generator is responsible for designating and characterizing an aqueous waste stream. Accordingly, each generator samples and analyzes an influent waste stream using the target list of parameters (Table 4-1) for the waste acceptance process. At the discretion of the LERF and ETF management, a generator may provide process knowledge in lieu of some analyses as discussed in Section 2.1.1. The LERF and ETF personnel will work with the generator to determine which parameters are appropriate for the characterization.

The analytical methods for these parameters are provided in Appendix B. All methods for nonradioactive parameters are EPA methods. Additional analyses may be required if historical information and process knowledge indicate that an influent aqueous waste contains constituents not included in the target list of parameters. For example, if process knowledge indicates that an aqueous waste contains a parameter that is regulated by the Groundwater Quality Criteria (WAC 173-200), that parameter(s) would be added to the suite of analyses required for that aqueous waste stream.

The analytical data for the parameters presented in Table 4-1, including VOC, SVOC, metals, anions, general chemistry parameters, and radionuclides are used to define the physical and chemical properties of the aqueous waste to:

- Set operating conditions in the LERF and ETF (e.g., to determine operating configuration - refer to Section 2.2.2)
- Identify concentrations of some constituents which may also interfere with, or foul the ETF treatment process (e.g., fouling of the RO membranes - refer to Section 2.2.2)
- Evaluate LERF liner and piping material compatibility
- Determine treatability to evaluate if applicable constituents in the treated effluent will meet Discharge Permit and Delisting limits
- Estimate concentrations of some constituents in the waste generated in the secondary treatment train (i.e., dry powder waste).

Some analyses also are required to address special conditions (Section 3.0) or for other specific purposes as indicated below:

- Formate analysis is required for compliance with special conditions for PC (refer to Section 3.2).
- Total Kjeldahl nitrogen (TKN) analysis required under the Discharge Permit to meet special conditions for PC (until discharge permit is modified, refer to Section 3.1).
- Total dissolved solids analysis to predict volume of powder waste from the secondary treatment train.
- Radionuclide analyses are used for inventorying radionuclides as necessary to demonstrate compliance with U.S. Department of Energy Orders (including DOE Orders 5480.5 and 5480.23) and monitoring for some radionuclides required for compliance with Discharge Permit.

Table 4-1. Target Parameters for Influent Aqueous Waste Analyses.
(sheet 1 of 2)

VOLATILE ORGANIC COMPOUNDS	SEMIVOLATILE ORGANIC COMPOUNDS
Acetone	Acetophenone
Benzene	Benzyl alcohol
1-Butyl alcohol (1-Butanol)	2-Butoxyethanol
Carbon tetrachloride	Cresol (o, p, m)
Chlorobenzene	1,4-Dichlorobenzene
Chloroform	Dimethylnitrosamine (N-Nitrosodimethylamine)
1,2-Dichloroethane (total)	Di-n-octyl phthalate
1,1-Dichloroethylene	Hexachloroethane
2-Hexanone	Naphthalene
Methyl ethyl ketone (2-Butanone)	Tributyl phosphate
Methyl isobutyl ketone (Hexone, 4-Methyl-2-pentanone)	
2-Pentanone	
Tetrachloroethylene	
Tetrahydrofuran	
Toluene	
1,1,1-Trichloroethane	
1,1,2-Trichloroethane	
Trichloroethylene	
Vinyl chloride	
TOTAL METALS	**RADIONUCLIDES**
Aluminum	Gross alpha
Antimony	Gross beta
Arsenic	Americium-241
Barium	Antimony-125
Beryllium	Carbon-14
Cadmium	Cerium/Praseodymium-144
Calcium	Cesium-134
Chromium	Cesium-137
Copper	Cobalt-60
Iron	Curium-244
Lead	Europium-154
Magnesium	Europium-155
Manganese	Gamma
Mercury	Iodine-129
Nickel	Neptunium-237
Potassium	Niobium-94
Selenium	Plutonium-238
Silicon	Plutonium-239/240
Silver	Radium-226
Sodium	Ruthenium-103
Uranium	Ruthenium-106
Vanadium	Strontium-90
Zinc	Technicium-99
	Tin-113
	Tritium
	Zinc-65

Table 4-1. Target Parameters for Influent Aqueous Waste Analyses.
(sheet 2 of 2)

ANIONS	GENERAL CHEMISTRY PARAMETERS
Bromide	Ammonia
Chloride	Total Kjeldahl nitrogen
Fluoride	Cyanide
Formate[1]	pH
Nitrate	Total suspended solids
Nitrite	Total dissolved solids
Phosphate	Total organic carbon
Sulfate	Specific conductivity

[1] Parameter only required for 242-A Evaporator process condensate (refer to Section 3.2).

5.0 TREATED EFFLUENT SAMPLING AND ANALYSIS

The treated aqueous waste, or effluent, from the ETF is collected in three 2,540,000-liter verification tanks before discharge to the SALDS. To determine whether the Discharge Permit early warning values and enforcement limits and the Delisting criteria are met, the effluent routinely is sampled at or before the verification tanks. The sampling and analyses performed are described in the following sections.

5.1 RATIONALE FOR EFFLUENT ANALYSIS PARAMETER SELECTION

The parameters measured in the treated effluent are required by the following regulatory documents:

- Delisting criteria from the Final Delisting (EPA 1995)
- Effluent limits from the State Waste Discharge Permit (Ecology 1995a)
- Early warning values from the State Waste Discharge Permit (Ecology 1995a).

The Final Delisting provides two testing regimes for the treated effluent. Under the initial verification testing regime, the first three verification tanks must be sampled and analyzed, and the data submitted to the U.S. Environmental Protection Agency (EPA). Following EPA approval, the subsequent verification testing regime is implemented, where every 10th tank is analyzed for the delisting constituents. If the concentration of any analyte is found to exceed a Discharge Permit enforcement limit or a Delisting criterion, the contents of the verification tank are reprocessed and/or re-analyzed. If the concentration of any analyte exceeds an early warning value, as a monthly average from treated effluent that is discharged, an early warning value report is prepared and submitted to Ecology.

5.2 EFFLUENT SAMPLING STRATEGY: METHODS, LOCATION, ANALYSES, AND FREQUENCY

Effluent sampling methods and locations, the analyses performed, and frequency of sampling are discussed in the following sections.

5.2.1 Effluent Sampling Method and Location

Samples of treated effluent are collected and analyzed to verify the treatment process using ETF-specific sampling protocol. These verification samples can be collected at two locations. At the first sampling location, a representative grab sample is collected from a sampling port on the verification tank recirculation line. The second sampler is located upstream of the verification tanks where flow proportional composite samples are collected for all analyses except VOC analysis. For VOCs, a zero-headspace, time proportional sampler capable of collecting a sample over a multiple-day period is used. Appendix B presents the sample containers, preservatives, and holding times for each parameter monitored in the effluent.

5.2.2 Analyses of Effluent

The parameters required by the current Discharge Permit and Delisting conditions are presented in Table 5-1. The analytical methods and PQLs associated with each parameter are provided in Appendix B. The methods and PQLs are equivalent to those used in the analysis of influent aqueous waste. With the exception of formic acid (analyzed as formate), analyses for the constituents associated with the newly

listed waste numbers (Section 3.2) already are required analyses in the effluent. An analysis for formate is not required unless this constituent is identified in the influent aqueous waste.

5.2.3 Frequency of Sampling

Treated effluent is tested for all parameters listed in Table 5-1 on a frequency consistent with the conditions of the Discharge Permit and the Final Delisting. This effluent must meet the Discharge Permit and Delisting limits associated with these parameters. Under normal operating conditions, grab samples are collected from each verification tank. When a composite sample is called for, the sample is collected over the period required to fill one verification tank.

During operation of the ETF, if one or more of the constituents exceeds a Delisting criterion, the Delisting conditions require the analysis of samples from the following two verification tanks volumes before effluent can be discharged. Treated effluent that does not meet Delisting criteria and Discharge Permit is not discharged to the SALDS and is recycled for further treatment.

Table 5-1. Rationale for Parameters to Be Monitored in Treated Effluent.

Parameter	Final Delisting[1]	Discharge Permit[2]	
		Enforcement Limit	Early Warning Value
VOLATILE ORGANIC COMPOUNDS			
Acetone	X		
Benzene	X		X
1-Butyl alcohol	X		
Carbon tetrachloride	X	X	
Chlorobenzene	X		
Chloroform	X		X
1,2-Dichloroethane	X		
1,1-Dichloroethylene	X		
Methyl ethyl ketone (2-Butanone)	X		
Methyl isobutyl ketone (4-methyl-2-Pentanone)	X		
Tetrachloroethylene	X	X	
Tetrahydrofuran			X
Toluene	X		
1,1,1-Trichloroethane	X		
1,1,2-Trichloroethane	X		X
Trichloroethylene	X		
Vinyl chloride	X		
SEMIVOLATILE ORGANIC COMPOUNDS			
Acetophenone			X
Benzyl alcohol	X		
Cresol (total)	X		
1,4-Dichlorobenzene	X		
Dimethylnitrosamine		X	
Di-n-octyl phthalate	X		
Hexachloroethane	X		
Naphthalene	X		
Tributyl phosphate	X		
TOTAL METALS[3]			
Antimony	X		
Arsenic	X	X	
Barium	X		
Beryllium	X		X
Cadmium	X		X
Chromium	X	X	
Copper			X
Lead	X		X
Mercury	X		X
Nickel	X		
Selenium	X		
Silver	X		
Vanadium	X		

Table 5-1. Rationale for Parameters to Be Monitored in Treated Effluent.

Parameter	Final Delisting[1]	Discharge Permit[2]	
		Enforcement Limit	Early Warning Value
Zinc	X		
ANIONS			
Fluoride	X		
Nitrate (as N)		X	
Nitrite (as N)			X
Sulfate			X
OTHER ANALYSES			
Ammonia[4] (as N)	X		X
Total Kjeldahl nitrogen (as N)			X
Cyanide	X		
Tritium			M
Strontium-90			M
Gross alpha			M
Gross beta			M
Total dissolved solids			X
Total organic carbon			X
Total suspended solids			X
Specific conductivity		M	

[1] Parameters required by the current conditions of the Final Delisting, 40 CFR 261, Appendix IX, Table 2 (EPA 1995).

[2] Parameters required by the current conditions of the State Waste Discharge Permit, No. ST 4500 (Ecology 1995a).

[3] Metals reported as total concentrations.

[4] Although the Final Delisting lists "ammonium" (NH_4^+), the standard analytical methods measure ammonia (NH_3). Ammonia is assumed to be the contaminant of concern.

X Rationale for measuring this parameter in treated effluent.

M Monitor only; no limit defined.

6.0 EFFLUENT TREATMENT FACILITY GENERATED WASTE SAMPLING AND ANALYSIS

The wastes discussed in this section are managed in the container storage areas of the ETF and include the wastes generated at the ETF. This section describes the characterization of the following secondary waste streams generated within the ETF:

- Secondary waste generated from the treatment process, including the following waste forms:
  - dry powder waste
  - concentrate tanks slurry
  - sludge removed from process tanks.
- Waste generated by operations and maintenance activities
- Miscellaneous waste generated within the ETF.

For each waste stream, the waste is described, a characterization methodology and rationale are provided, and sampling requirements are addressed.

6.1 SECONDARY WASTE GENERATED FROM TREATMENT PROCESSES

The following terms used in this Section, including powder, dry powder, waste powder, and dry waste powder, are equivalent to the term "dry powder waste".

A dry powder waste is generated from the secondary treatment train, from the treatment of an aqueous waste. Waste is received in the secondary treatment train in waste receiving tanks where it is fed into an evaporator. Concentrate waste from the evaporator is then fed to a concentrate tank. From these tanks, the waste is fed to a thin film dryer and dried into a powder, and collected into containers. The containers are filled via a remotely controlled system. The condensed overheads from the evaporator and thin film dryer are returned to the surge tank to be fed to the primary treatment train.

Occasionally, salts from the treatment process (e.g., calcium sulfate and magnesium hydroxide) accumulate in process tanks as sludge. Because processing these salts could cause fouling in the thin film dryer, and to allow uninterrupted operation of the treatment process, the sludge is removed and placed in containers. The sludge is dewatered and the supernate is pumped back to the ETF for treatment.

The secondary treatment system typically receives and processes the following by-products generated from the primary treatment train:

- Concentrate from the first RO stage
- Backwash from the rough and fine filters
- Regeneration waste from the ion exchange system
- Spillage or overflow collected in the process sumps.

In an alternate operating scenario, some aqueous wastes may be fed to the secondary treatment train before the primary treatment train. A more complete description of these processes can be found in Chapter 4.0 of the dangerous waste permit application for LERF and ETF (DOE/RL-97-03).

6.1.1 Rationale for Selection of Parameters for Analysis

The ETF secondary waste is anticipated to consist primarily of sulfate salts, minor amounts of metals, and radionuclides. The designation of the ETF secondary waste is based on influent characterization data. These data are used to assign applicable listed waste numbers to the secondary waste and to determine if the secondary waste would designate as a characteristic waste because of toxic metals.

Concentrations of metals in the secondary waste are projected by comparing the influent metals data to the removal efficiencies of the ETF treatment process. When the influent data indicate that the secondary waste will not designate as a characteristic waste, the secondary waste, as slurry, sludge, or dry powder, is not sampled and analyzed for metals.

The influent data, in conjunction with knowledge of the ETF treatment processes, also are used to determine the LDR status of the ETF secondary waste. Knowledge of the treatment process indicates that VOCs and SVOCs (i.e., listed waste constituents) are not expected in the secondary waste because of the organic destruction capability of the UV/OX and the temperatures of the thin film dryer. Accordingly, when the influent data indicate that the secondary waste meets the LDR treatment standards, the secondary waste, as slurry, sludge, or dry powder, is not sampled and analyzed for VOCs or SVOCs.

The parameters for analysis of the ETF secondary waste are provided in Table 6-1. The specific analytical methods for these analyses are provided in Appendix B. Additionally, samples of slurry or sludge undergo a total solids analysis to convert the analytical data on other parameters to dry weight concentrations.

6.1.2 Sampling Methods

The dry powder waste and containerized sludge are sampled from containers using the principles presented in SW-846 (EPA 1986) and ASTM Methods (American Society for Testing Materials), as referenced in WAC 173-303-110(2). The sample container requirements, sample preservation requirements, and maximum holding times for each of the parameters analyzed in either matrix are presented in Appendix B.

Concentrate tank waste samples are collected from recirculation lines, which provide mixing in the tank during pH adjustment and prevent caking. The protocol for concentrate tank sampling prescribes opening a sample port in the recirculation line to collect samples directly into sample containers. The sample port line is flushed before collecting a grab sample. The VOC sampling typically is performed first for grab samples. Each VOC sample container will be filled such that cavitation at the sample valve is minimized and the container has no head space. The remainder of the containers for the other parameters will be filled next.

6.1.3 Sampling Frequency

The ETF secondary waste is sampled at a frequency of two containers per batch. A batch is defined as any volume of aqueous waste that is being treated under consistent and constant process conditions. The secondary waste will be resampled under the following changes in process conditions:

- Change in an influent source (e.g., change in well-head)
- Change in process chemistry.

If waste from the concentrate tanks is used for characterization of a batch of influent waste, up to a maximum of three representative samples will be collected from the concentrate tanks. These samples will be analyzed for the appropriate parameters identified in Table 6-1 based on the needs identified from evaluating influent sampling and analysis data. When radiological and/or chemical exposures are of

concern, analytical results from concentrate tank samples will be used to represent the powder waste generated from the treatment of that aqueous waste(s). The dry powder or concentrate tanks will be re-sampled in the following situations:

- The LERF and the ETF management have been notified, or have reason to believe that the process generating the waste has changed (for example, a change in the source such as a change in the well-head for groundwater that significantly changes the aqueous waste characterization).

- The LERF and the ETF management notes an increase or decrease in the concentration of a constituent in an aqueous waste stream, beyond the range of concentrations that was described or predicted in the waste characterization.

6.1.4 Special Requirements Pertaining to Land Disposal Restrictions

Containers of the ETF secondary waste are transferred to a storage or final disposal unit, as appropriate (e.g., the Central Waste Complex or to the Environmental Restoration Disposal Facility). The ETF personnel provide the analytical characterization data and necessary process knowledge for the waste to be tracked by the receiving staff, and for the appropriate LDR documentation.

The following information on the secondary waste is included on the LDR documentation provided to the receiving unit:

- Dangerous waste numbers (as applicable)

- Determination on whether the waste is restricted from land disposal according to the requirements of 40 CFR 268/WAC 173-303-140 (i.e., the LDR status of the waste)

- The waste tracking information associated with the transfer of waste

- Waste analysis results.

6.2 OPERATIONS AND MAINTENANCE WASTE GENERATED AT THE 200 AREA EFFLUENT TREATMENT FACILITY

Operation and maintenance of process and ancillary equipment generates additional routine waste. These waste materials are segregated to ensure proper handling and disposition, and to minimize the commingling of potentially dangerous waste with nondangerous waste. The following waste streams are anticipated to be generated during routine operation and maintenance of the ETF. This waste might or might not be dangerous waste, depending on the nature of the material and its exposure to a dangerous waste.

- Spent lubricating oils and paint waste from pumps, the dryer rotor, compressors, blowers, and general maintenance activities

- Spent filter media process filters

- Spent ion exchange resin

- HEPA filters

- UV light tubes

- RO membranes
- Equipment that cannot be returned to service
- Other miscellaneous waste that might contact a dangerous waste (e.g., plastic sheeting, glass, rags, paper, waste solvent or aerosol cans).

These waste streams are stored at the ETF before being transferred for final treatment, storage, or disposal as appropriate. This waste is characterized and designated using process knowledge (from previously determined influent aqueous waste composition information); analytical data; and material safety data sheets (MSDS) of the chemical products present in the waste or used (these data sheets are maintained at the ETF). Sampling of these waste streams is not anticipated; however, if an unidentified or unlabeled waste is discovered, that waste is sampled. This 'unknown' waste is sampled and analyzed for the parameters in Table 6-1 as appropriate, and will be designated according to Washington state regulatory requirements. The specific analytical methods for these analyses are provided in Appendix B.

6.3 OTHER WASTE GENERATED AT THE 200 AREA EFFLUENT TREATMENT FACILITY

There are two other potential sources of waste at the ETF: spills and/or overflows, and discarded chemical products. Spilled material that potentially might be dangerous waste generally is routed to the ETF sumps where the material is transferred to either the surge tank for treatment or to the secondary treatment train. A spilled material also could be containerized and transferred to another TSD unit. In most cases, process knowledge and the use of MSDSs are sufficient to designate the waste material. If the source of the spilled material is unknown and the material cannot be routed to the ETF sumps, a sample of the waste is collected and analyzed according to Table 6-1, as necessary, for appropriate characterization of the waste. Unknown wastes will be designated according to WAC 173-303. The specific analytical methods for these analyses are provided in Appendix B.

A discarded chemical product waste stream could be generated if process chemicals, cleaning agents, or maintenance products become contaminated or are otherwise rendered unusable. In all cases, these materials are appropriately containerized and designated. Sampling is performed, as appropriate, to determine the radioactivity of a waste or if required for waste designation.

Table 6-1. 200 Area Effluent Treatment Facility Generated Waste - Sampling and Analysis.

Parameter[1]	Rationale
Total solids or percent water[2]	• Calculate dry weight concentrations
Volatile organic compounds[3]	• LDR - verify treatment standards
Semivolatile organic compounds[3]	• LDR - verify treatment standards
Metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver)	• Waste designation • LDR - verify treatment standards
Nitrate	• Address receiving TSD waste acceptance requirements
pH	• Waste designation

[1] For concentrate tank samples, the total sample (solid plus liquid) is analyzed and the analytical result is expressed on a dry weight basis. The result for toxicity characteristic metal and organic is divided by a factor of 20 and compared to the toxicity characteristic (TC) constituent limits [WAC 173-303-090(8)]. If the TC limit is met or exceeded, the waste is designated accordingly. All measured parameters are compared against the corresponding treatment standards.

[2] Total solids or percent water are not determined for unknown waste and dry powder waste samples and are analyzed in maintenance waste and sludge samples, as appropriate (i.e., percent water might not be required for such routine maintenance waste as aerosol cans, fluorescent tubes, waste oils, batteries, etc., or sludge that has dried).

[3] VOC and/or SVOC analysis of secondary waste is required unless influent characterization data and process knowledge indicate that the constituent will not be in the final secondary waste at or above the LDR.

LDR = land disposal restrictions.

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7.0 QUALITY ASSURANCE/QUALITY CONTROL

The following quality assurance/quality control (QA/QC) information for the ETF and LERF is provided as required by WAC 173-303-810(6). The sampling and analysis activities at the ETF and LERF conform to the requirements of a ETF/LERF-specific quality assurance project plan and are in accordance with the following EPA guidance documents:

- *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, SW-846, Third Edition, as amended, U.S. Environmental Protection Agency, Washington, DC, July 1992, as referenced in WAC 173-303-110.

- *Methods for Chemical Analysis of Water and Wastes*, EPA-600/4-7-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, March 1993.

7.1 SAMPLING PROGRAM

Typically generators are responsible for the sampling and analysis of an influent aqueous. However, samples of influent aqueous waste can be collected at the LERF or the Load-In Station. Samples of treated effluent are collected at the verification tanks. Secondary waste generated from the treatment process generally is sampled in the dry powder form; however, the secondary waste also could be sampled while in slurry form for characterization. Sampling of influent aqueous waste, treated effluent, and secondary waste is discussed in Sections 4.0, 5.0, and 6.0, respectively, of the WAP.

Specific information on sample holding times, preservatives, and sample containers is provided in Appendix B. The selection of the sample collection device depends on the type of sample, the sample container, the sampling location and the nature and distribution of the waste components. In general, the methodologies used for specific materials correspond to those referenced to WAC 173-303-110(2). The selection and use of the sampling device is supervised or performed by a person thoroughly familiar with the sampling requirements. Samples are collected according to ETF/LERF-specific sampling protocol.

Sampling equipment is constructed of nonreactive materials such as glass, plastic, aluminum, or stainless steel, as indicated by the nature and matrix of the waste. Care is taken in the selection of the sampling device to prevent contamination of the sample and to ensure compatibility of materials. For example, plastic bottles are not used to collect some organic wastes.

7.2 ANALYTICAL PROGRAM

The onsite laboratory employed by the ETF and LERF organization is required to have a program of quality control practices and procedures to ensure that precision and accuracy are maintained. The QA/QC program for sampling complies with the applicable Hanford Site standard requirements and the regulatory requirements. All analytical data are defensible and traceable to specific, related QC samples and calibrations. Offsite laboratories employed by the ETF and LERF must meet the same QA/QC requirements as onsite laboratories and must demonstrate quality control practices that are comparable to the onsite laboratory's program. A review of an offsite laboratory may be conducted to ensure that the quality control of ETF and LERF data is maintained. The SW-846 analytical methods are followed (as indicated in Appendix B). However, other methods may be substituted for a parameter if the PQL can be met.

The chemical parameters and associated analytical methods identified in Appendix B are used to characterize an influent aqueous waste, effluent waste, and ETF secondary waste. The analytical data on these parameters are also used to establish that key decision limits pertinent to proper waste management are met. These key decision limits are numerical thresholds, which include:

- liner compatibility limits for an influent aqueous waste as managed in LERF (may include blending a waste with other wastes to meet these limits)
- the LDR status of the ETF secondary waste
- delisting limits for treated effluent.

Where analytical data are used in key decision making, the PQL of an analytical parameter (or sum of the PQLs, as indicated by the decision) must be at or below the key decision limit.

Good laboratory practices, which encompass sampling, sample handling, housekeeping and safety, are maintained at all laboratories. The following section describe the specific practices which are implemented at the onsite laboratory to maintain the precision and accuracy goal of ± 20 percent for quality control samples which include method blank, quality control check, matrix spike, and duplicate samples.

The decision to re-analyze if the stated precision and accuracy goals are not met will depend on the use of the analytical results. Generally, only analytical results used in key decisions would require re-analysis if precision and accuracy goals were not met. For example, if the precision and accuracy goals are not met in a liner compatibility analysis, the sample would generally be re-analyzed if the results were close to a compatibility limit. However, if the analytical results suggested that concentrations were an order of magnitude below a liner compatibility limit, generally re-analysis would not be required. The decision to re-analyze a waste in a key decision situation will be made on a case-by-case basis.

7.2.1 Contamination Evaluation

Method blank samples are prepared with each batch of samples (at least 1 in batch of 20) and analyzed to ensure sample contamination has not occurred.

7.2.2 Quality Control Check Sample

A quality control check sample is analyzed with each batch (at least 1 in batch of 20) for each analytical parameter determined. The results show that analytical procedures are properly performed and that calibration and standardization of instrumentation are within acceptable limits per the method.

7.2.3 Matrix Spike Analyses

Matrix spike samples are employed to monitor recoveries and demonstrate accuracy. Matrix spike samples are periodically analyzed to provide information about the effect of the sample matrix on the analyte in question. Typically a ratio of one spike for each analytical batch of samples, or 1 in 20, is maintained.

7.2.4 Duplicate Analyses

A laboratory sample duplicate or a matrix spike duplicate is analyzed to assess analytical precision in the laboratory. Typically, a ratio of one duplicate sample for each analytical batch of samples, or 1 in 20, is maintained.

7.3 CONCLUSION

The aforementioned sampling and analytical quality practices help ensure that the data obtained are precise and accurate for the waste stream being sampled. The analytical results are used by ETF and LERF management to decide whether or not to accept a particular waste stream and, upon acceptance, to determine the appropriate method of treatment, storage, and disposal. Results are also important to ensure that wastes are managed properly by the ETF and LERF and that incompatible wastes are not inadvertently combined. Just as these results are important, so is the quality of these results. Thus, the quality of the analytical data, the thoroughness and care with which the sampling and analyses are performed and reported, provides an important basis for day-to-day operational decisions.

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8.0 REFERENCES

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DOE/RL-97-03, *Hanford Facility Dangerous Waste Permit Application, Liquid Effluent Retention Facility and 200 Area Effluent Treatment Facility*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Ecology, 1994, *Dangerous Waste Portion of the Resource Conservation and Recovery Act Permit for the Treatment, Storage, and Disposal of Dangerous Waste*, Number WA7890008967, (Revision 3, December 1996), Washington State Department of Ecology, Olympia, Washington.

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APPENDICES

A TYPICAL AQUEOUS WASTE PROFILE SHEET

B ANALYTICAL METHODS, SAMPLE CONTAINERS, PRESERVATIVE METHODS, AND HOLDING TIMES

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APPENDIX A

TYPICAL AQUEOUS WASTE PROFILE SHEET

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APPENDIX B

ANALYTICAL METHODS, SAMPLE CONTAINERS, PRESERVATIVE METHODS, AND HOLDING TIMES

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Table B-1. Sample and Analysis Criteria for Influent Aqueous Waste and Treated Effluent.

Parameter	Analytical method[a]	Method PQL[b]	Accuracy/Precision for Method[k] (percent)	Sample container[e]/ Preservative[c]/ Holding time[d]
VOLATILE ORGANIC COMPOUNDS				
Acetone	8260A	40	50-100	Sample container 2 x 40-mL amber glass with septum [l] Preservative 1:1 HCl to pH<2; 4°C [l] Holding time 14 days
Benzene		5	40-150	
1-Butyl alcohol (1-Butanol)		500	40-150	
Carbon tetrachloride		5	65-130	
Chlorobenzene		5	40-150	
Chloroform		5	50-130	
1,2-Dichloroethane		5	50-150	
1,2-Dichloroethene		5	50-150	
1,1-Dichloroethylene		5	60-130	
2-Hexanone		50	60-130	
Methylene chloride[f]		5	50-150	
Methyl ethyl ketone (2-Butanone)		100	65-130	
Methyl isobutyl ketone (Hexone, 4-Methyl-2-pentanone)		50	50-160	
2-Pentanone		10	50-160	
Tetrachloroethylene		5	65-140	
Tetrahydrofuran		100	47-150	
Toluene		5	50-160	
1,1,1-Trichloroethane		5	50-150	
1,1,2-Trichloroethane		5	50-150	
Trichloroethylene		5	70-155	
Xylene		5	50-150	
Vinyl chloride		10	40-130	

Table B-1. Sample and Analysis Criteria for Influent Aqueous Waste and Treated Effluent.

Parameter	Analytical method[a]	Method PQL[b]	Accuracy/Precision for Method[k] (percent)	Sample container[c]/ Preservative[c]/ Holding time[d]
SEMIVOLATILE ORGANIC COMPOUNDS				
Acetophenone	8270B	10	70-110	Sample container 4 x 1-liter amber glass Preservative 4°C Holding time 7 days for extraction; 40 days for analysis after extraction
Benzyl alcohol		20	70-120	
2-Butoxyethanol		1000	65-105	
Cresol (o, p, m)		10	55-115	
1,4-Dichlorobenzene		10	45-95	
Dimethylnitrosamine		10	50-120	
2,4-Dinitrotoluene		10	65-100	
Di-n-octyl phthalate		10	70-130	
Hexachloroethane		10	50-110	
Naphthalene		10	60-120	
Tributyl phosphate		100	75-125	
TOTAL METALS				
Aluminum	6010A/EPA-600 200.7	450	75 - 125	Sample container 1 x 0.5-liter plastic/glass Preservative 1:1 HNO_3 to pH<2 Holding time 180 days; mercury 28 days
Antimony	EPA-600 200.8	30	75 - 125	
Arsenic	EPA-600 200.8	15	75 - 125	
Barium	6010A/EPA-600 200.7	20	75 - 125	
Beryllium	6010A/EPA-600 200.7	40	75 - 125	
Cadmium	EPA-600 200.8	5	75 - 125	
Calcium	6010A/EPA-600 200.7	100	75 - 125	
Chromium	7191/EPA-600 200.8	20	75 - 125	
Copper	6010A/EPA-600 200.7	70	75 - 125	
Iron	6010A/EPA-600 200.7	100	75 - 125	
Lead	EPA-600 200.8	10	75 - 125	
Magnesium	6010A/EPA-600 200.7	300	75 - 125	

Table B-1. Sample and Analysis Criteria for Influent Aqueous Waste and Treated Effluent.

Parameter	Analytical method[a]	Method PQL[b]	Accuracy/Precision for Method[b] (percent)	Sample container[c]/ Preservative[c]/ Holding time[d]
Manganese	6010A/EPA-600 200.7	50	75 - 125	
Mercury	EPA 245.1/EPA-600 200.8	2	75 - 125	
Nickel	6010A/EPA-600 200.7	75	75 - 125	
Potassium	6010A/EPA-600 200.7	10,000	75 - 125	
Selenium	EPA-600 200.8	20	75 - 125	
Silicon	6010A/EPA-600 200.7	580	75 - 125	
Silver	6010A/EPA-600 200.7	70	75 - 125	
Sodium	6010A/EPA-600 200.7	290	75 - 125	
Uranium	EPA-600 200.8	5	75 - 125	
Vanadium	6010A/EPA-600 200.7	80	75 - 125	
Zinc	6010A/EPA-600 200.7	20	75 - 125	
GENERAL CHEMISTRY				
Bromide	EPA-600 300.0	2000	75 - 125	Sample container 1 x 1-liter glass Preservative 4°C Holding time 28 days
Chloride		1000	75 - 125	
Fluoride		500	75 - 125	
Formate[i]		1250	75 - 125	
Nitrate		100	75 - 125	
Nitrite		100	75 - 125	
Sulfate		10,000	75 - 125	
Phosphate		1500	75 - 125	
Ammonia[e]	EPA-600 350.3/350.1	40	75 - 125	Sample container 250 mL glass

Table B-1. Sample and Analysis Criteria for Influent Aqueous Waste and Treated Effluent.

Parameter	Analytical method[a]	Method PQL[b]	Accuracy/Precision for Method[k] (percent)	Sample container[c]/ Preservative[c]/ Holding time[d]
Total Kjeldahl nitrogen	EPA-600 351.2	600	75 - 125	Preservative H_2SO_4 to pH<2; 4°C Holding time 28 days
Cyanide	9010A/ EPA-600 335.3	100	75 - 125	Sample container 500 mL polyethylene Preservative 6M NaOH to pH>12; 4°C Holding time 14 days
Total dissolved solids	EPA-600 160.1	RL 10,000	75 - 125	Sample container 1 L glass Preservative None Holding time 7 days for pH - as soon as practical
Total suspended solids	EPA-600 160.2	RL 4,000	75 - 125	
Specific conductivity	EPA-600 120.1 (in lab)	RL 10[g]	75 - 125	
pH[h]	EPA-600 150.1/9040	RL +/- 0.1	75 - 125	
Total organic carbon	9060A	RL 1,000	75 - 125	Sample container 250 mL glass Preservative HCl or H_2SO_4 to pH<2; 4°C Holding time 28 days

Table B-1. Sample and Analysis Criteria for Influent Aqueous Waste and Treated Effluent.

Parameter	Analytical method[a]	Method PQL[b]	Accuracy/Precision for Method[k] (percent)	Sample container[c]/ Preservative[c]/ Holding time[d]
RADIONUCLIDES[j]				
Gross alpha	Laboratory specific	3 pCi/L	NA	Sample container 4 x 1-L glass Preservative HNO3 to pH < 2 Holding time 180 days
Gross beta	Laboratory specific	4 pCi/L	NA	
Gamma	Laboratory specific	NA	NA	
Americium-241	Laboratory specific	NA	NA	
Antimony-125	Laboratory specific	NA	NA	
Cerium-144	Laboratory specific	NA	NA	
Cesium-134	Laboratory specific	NA	NA	
Cesium-137	Laboratory specific	NA	NA	
Cobalt-60	Laboratory specific	NA	NA	
Curium-244	Laboratory specific	NA	NA	
Europium-154	Laboratory specific	NA	NA	
Europium-155	Laboratory specific	NA	NA	
Neptunium-237	Laboratory specific	NA	NA	
Niobium-94	Laboratory specific	NA	NA	
Plutonium-238	Laboratory specific	NA	NA	
Plutonium-239/240	Laboratory specific	NA	NA	
Radium-226	Laboratory specific	NA	NA	
Ruthenium-103	Laboratory specific	NA	NA	
Ruthenium-106	Laboratory specific	NA	NA	
Strontium-90	Laboratory specific	5 pCi/L	NA	
Tin-113	Laboratory specific	NA	NA	
Zinc-65	Laboratory specific	NA	NA	
Carbon-14	Laboratory specific	NA	NA	Sample container 1 x 1-L glass Preservative No preservative added Holding time 180 days
Iodine-129	Laboratory specific	NA	NA	
Technicium-99	Laboratory specific	NA	NA	
Tritium	Laboratory specific	460 pCi/L	NA	

[a] SW-846 methods are presented unless otherwise noted. Other methods might be substituted if the applicable PQL can be met.
[b] PQL is determined from method detection level (MDL), where PQL = 10 x MDL (for reagent-grade water); however, PQL is affected by sample matrix. PQL units are parts per billion unless otherwise noted.
[c] Sample bottle and preservatives could be adjusted, as applicable, to minimize sample volume.
[d] Holding time = time between sampling and analysis.
[e] Although the Final Delisting lists "ammonium" (NH_4^+), the standard analytical methods measure ammonia (NH_3). Ammonia is assumed to be the contaminant of concern.
[f] Methylene chloride is not analyzed for treated effluent sampling.
[g] Conductivity reported in micromhos per centimeter
[h] pH monitored in influent aqueous waste only.
[i] Analysis for formate only required if detected in the influent aqueous waste.
[j] PQLs provided for those radionuclides which are monitored as part of the Discharge Permit.
[k] Accuracy/precision used to confirm or re-establish MDL.
[l] VOC refrigerated composite sampler with syringe requires no chemical preservative.

mL = milliliter.
RL = reporting limit.
pCi/L = picocuries per liter.
PQL = practical quantitation limit
NA = not applicable.
ND = not determined.
MDL = method detection level.

Table B-2. Sample Containers, Preservative Methods, and Holding Times for ETF Generated Waste .

Parameter	Analytical Method[a]	PQL[b]	Accuracy/Precision for Method[c] (percent)	Container[d]	Preservative[e]	Holding time[f]
Total Solids	EPA-600 160.3	10,000	75 - 125	1-liter glass	None	180 days
pH	WAC 173-303-110 (3)(a)(ii)[g]/ EPA-600 150.1/9040	±0.1				as soon as practical
Nitrate	EPA-600 300.0/9056	see Table B-1				28 days
Volatile organic compounds (combined method target compound lists)	8240 or 8260A	see Table B-1	See Table B-1	2-40 ml amber glass w/septum	None	7 days
Semivolatile organic compounds (method target compound list)	8270B	see Table B-1	See Table B-1	4-1,000 ml amber glass	None	Extract within 7 days; analyze extract within 40 days
Mercury	EPA-600 200.8, 245.1/6020	see Table B-1	75 - 125	500 ml plastic/glass	None	Mercury 28 days; 6 months all others
Selenium	EPA-600 200.8/6020	see Table B-1				
Arsenic	EPA-600 200.8/6020	see Table B-1				
Cadmium	EPA-600 200.8/6020	see Table B-1				
Total metals (method target list)	EPA-600 200.8 6020/6010A/7000 Series	see Table B-1				
Toxicity Characteristic Leaching Procedure[h]	1311	NA	NA	NA	NA	NA

[a] SW-846 methods are presented unless otherwise noted. Other methods might be substituted if the applicable PQL can be met.

[b] PQL is determined from method detection level (MDL), where PQL = 10 x MDL (may vary depending on matrix). PQL units are parts per billion unless otherwise noted.

[c] Container size and type could be changed as directed by the laboratory, or as required by the analytical method.

[d] No preservatives are added to containers because of the anticipated high concentrations of salts.

[e] Holding time equals time between sampling and analysis.

[f] For solid waste.

[g] Extraction procedure, as applicable; extract analyzed by referenced methods [WAC 173-303-110(3)(c)].

PQL = practical quantitation limit
MDL = method detection level
mL = milliliter.

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APPENDIX 4A

DETAILED DRAWINGS FOR THE LIQUID EFFLUENT RETENTION FACILITY

Drawings of the containment systems at the LERF are summarized in Table 4A-1. Because the failure of these containment systems at LERF could lead to the release of dangerous waste into the environment, Engineering Change Notices (ECNs) which affect these containment systems will be submitted to the Washington State Department of Ecology, as a Class 1, 2, or 3 permit modification, as required by WAC 173-303-830.

Table 4A-1. Liquid Effluent Retention Facility Containment System.

LERF System	Drawing Number	Outstanding ECNs	Drawing Title
Bottom Liner	H-2-79590, Sh 1, Rev. 3	None	Civil Plan, Sections and Details; Cell Basin Bottom Liner (Sheet 1)
Top Liner	H-2-79591, Sh 1, Rev. 3	None	Civil Plan, Sections and Details; Cell Basin Bottom Liner (Sheet 1)
Catch Basin	H-2-79593, Sh 1, Rev. 4	None	Civil Plan, Section and Details; Catch Basin (Sheet 1)

P&ID - piping and instrumentation diagram.

The drawings identified in Table 4A-2 illustrate the piping and instrumentation configuration within LERF, and of the transfer piping systems between the LERF and the 242-A Evaporator. These drawings are provided for general information and to demonstrate the adequacy of the design of the LERF as a surface impoundment. An update to these drawings and drawings identified in Table 4A-1 will be provided annually to the Washington State Department of Ecology.

Table 4A-2. Liquid Effluent Retention Facility Piping and Instrumentation.

LERF System	Drawing Number	Outstanding ECNs	Drawing Title
Transfer Piping to 242-A Evaporator	H-2-79604, Sh 1,Rev. 3	ECN-648330	Piping Plot and Key Plans; 242-A Evaporator Condensate Stream (Sheet 1)
LERF Piping and Instrumentation	H-2-88766, Sh 1, Rev. 3	ECN-648330 ECN-656789	P&ID; LERF Basin and ETF Influent (Sheet 1)
LERF Piping and Instrumentation	H-2-88766, Sh 2, Rev. 5	ECN-647209L ECN-648330	P&ID; LERF Basin and ETF Influent (Sheet 2)
LERF Piping and Instrumentation	H-2-88766, Sh 3, Rev. 6	ECN-648330 ECN-709380L	P&ID; LERF Basin and ETF Influent (Sheet 3)
LERF Piping and Instrumentation	H-2-88766, Sh 4, Rev. 6	ECN-648330 ECN-658584	P&ID; LERF Basin and ETF Influent (Sheet 4)
	H-2-89351, Sh 1, Rev. 7	None	Piping & Instrumentation Diagram - Legend

P&ID - piping and instrumentation diagram.

APPENDIX 4A

DETAILED DRAWINGS FOR THE LIQUID EFFLUENT RETENTION FACILITY

Outstanding ECNs

S

ORIGINAL

cpf 4
cpf 13A
cpf 13B 1 4
cpf 1PF 1PF 4

ENGINEERING CHANGE NOTICE ESSENTIAL 2nd 10/18/00

Page 1 of 18

1. ECN 648330
Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental (●)	MA Przybylski, FFS, S5-50, 376-4017	○ Yes ● No	10/13/2000
Direct Revision ○			
Change ECN ○			
Temporary ○			
Standby ○			
Supersedure ○			
Cancel/Void ○			

6. Project Title/No./Work Order No.	7. Bldg./Sys./Fac. No.	8. Approval Designator
Site/Utility Systems TWRS Privatization Phase I	242-AL/60M	T, E
9. Document Number Changed by this ECN (includes sheet no. and rev.)	**10. Related ECN No(s).**	**11. Related PO No.**
See Block 13a Below	N/A	N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Completed	12d. Restored to Original Condition (Temp. or Standby ECNs only)
● Yes (fill out Blk. 12b) ○ No (NA Blks. 12b, 12c, 12d)	EL-00-00209	Design Authority/Cog. Engineer Signature & Date	N/A. Design Authority/Cog. Engineer Signature & Date

13a. Description of Change — 13b. Design Baseline Document? ● Yes ○ No

- H-2-88766 sh1, rev.3; revise as shown on page 5.
- H-2-88766 sh2, rev.5; revise as shown on page 6.
- H-2-88766 sh3, rev.6; revise as shown on page 7.
- H-2-88766 sh4, rev.6; revise as shown on page 8.
- H-2-88766 sh5, rev.0; Page 9 of this ECN supercedes Sh 5, Rev 0 of H-2-88766 in its entirety. Appropriate changes shown on page 9.
- H-2-88815 sh5, rev.2; revise as shown on page 10.

H-2-88818 sh2, rev.0; add elementary ladder rungs 38 thru 44, as shown on page 11.

H-2-88836 sh3, rev.1; add termination wiring as shown on page 11.

SEE PAGE 3 FOR CONTINUATION OF BLOCK 13a.

14a. Justification (mark one)	14b. Justification Details
Criteria Change ○	This ECN identifies all modifications to the existing LERF/ETF essential drawings caused by W519 tie ins.
Design Improvement ○	
Environmental ○	
Facility Deactivation ○	
As-Found ○	
Facilitate Const. ●	
Const. Error/Omission ○	
Design Error/Omission ○	

15. Distribution (include name, MSIN, and no. of copies)

NHC Files	G3-11	TDC	E6-02	BA Messinger	B4-39
RJ Parazin	S5-09	OCL/FILE	S5-09	JM Isdell	B4-39
ML Alexander	E6-27	Project Records	R1-29	JB Benton*	S6-72
MA Friedrich	G3-15	JM Neville	G3-11	MJ Brown*	S6-72
MA Haq	B4-39	SJ Lepka	S5-09	* Advanced Copy	
JL Henderson	G3-11	NJ Sullivan	S6-72		
JJ Huston	B4-68	LL Lin*	S6-72		
MA Przybylski*	S5-50	MM Towne*	S6-74		

RELEASE STAMP

OCT 31 2000
DATE:
STA: 30
HANFORD RELEASE
ID: 18

A-7900-013-2 (10/97)

A-7900-013-1

ORIGINAL

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 648330

16. Design Verification Required	17. Cost Impact		18. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION	
⊗ Yes	Additional ○ $ _____	Additional ○ $ N/A	Improvement ○ N/A
○ No	Savings ○ $ _____	Savings ○ $ N/A	Delay ○ N/A

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☒	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☒
Equipment Spec.	☐	Maintenance Procedure	☒	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☒
Vendor Information	☒	Operating Procedure	☒	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐	~~N/A~~ 2dd	☒
Environmental Permit	☐	Inventory Adjustment Request	☒		☐

10/31/00

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
~~See Page 3 and 4 for Other Affected Documents.~~ 2dd 10/31/00		
POP-60M-001, POP-60M-003, ARP-60M-001, HNF-SD-LEF-MM-002		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	(INFORMAL REVIEW)	10-31-00	Design Agent	M A Pozzylotti	10/25/00
Cog. Eng.			PE		
→ Cog. Mgr.	M J Sullivan	10-31-00	QA		
QA			Safety		
Safety			Design		
→ Environ.	F M Mann	10-31-00	Environ.		
Other			Other		
~~PDF~~ Cog Eng	M J Brown	10/26/00			
	H B Burton	10/31/00	DEPARTMENT OF ENERGY		
	C M Tanner	10/31/00	Signature or a Control Number that tracks the Approval Signature		
			ADDITIONAL		

13a.CONTINUATION:

·H-2-79668 sh5, rev.6; add additional heat trace loads to elementary diagrams as shown on page 12.

·H-2-85323 sh1, rev.0; add panelboard A as shown on page 13.

·H-2-85323 sh3, rev.2; revise as shown on page 14.

·H-2-85323 sh4, rev.4; revise as shown on page 15.

·H-2-85323 sh5, rev.2; revise as shown on page 16.

·H-2-85323 sh8, rev.0; add new sheet 8 as shown on page 17.

10/26/00

~~Block 20~~ Other Affected Documents:

H-2-79604,sh1 / Rev 3 / This drawing is modified by project W519, drawing H-2-830093, sh 1.

H-13-000198, sh 1 / Rev 1 / & sh 2 / Rev 1 / These drawings are modified by project W519, drawing H-2-830093.

H-13-000198, sh 3 / Rev 1 / Add the following pipelines to drawing. Also see this ECN (648330) for pipeline information.
4"-WTP-001-M17, 3"-WTP-002-M17, 4"-80W-001-M17, 4"-80W-002-M17
4"-80W-003-M17, 4"-80W-004-M17, 4"-80W-005-M17

H-2-79609 sh 1 / Rev 3 / This drawing is modified by project W519, drawings H-2-830095, sh 1, H-2-830096, sh 1 and H-2-830097, sh 1. The 3"-WTP-002-M17 line ties into the PC5000 line at N41804.7, W47070 at STA 1+357.1 (Zone D-5).

H-2-79610 sh 1 / Rev 3 / This drawing is modified by project W519, drawings H-2-830097 sh 1 and H-2-830098 sh 1.

H-2-79613 sh 1 / Rev 4 / This drawing is modified by project W519, drawing H-2-830099, sh 1-3.

H-2-79614 sh 1 / Rev 4 / This drawing is modified by project W519, drawing H-2-830100, sh 1-3.

H-2-79615 sh 1 / Rev 4 / This drawing is modified by project W519, drawing H-2-830101, sh 1-3.

H-2-88738, sh 1 / Rev 1 / & sh 2 / Rev 1 / Modified by project W519.
See drawings H-2-830105 through H-2-830109 for changes.

H-2-88810, sh 1 / Rev 1 / sh 2 / Rev. 1 / sh 3 / Rev 1 / sh 4 / Rev 0 / Modified by project W519. See drawings H-2-830105 through H-2-830109 for changes.

good 10/31/00

H-2-88813, sh 1 / Rev 1 / & sh 2 / Rev 1 / ~~sh 4 / Rev 0~~ / Modified by project W519.
See drawings H-2-830105 through H-2-830109 for changes.

H-2-88817, sh 1 / Rev 2 / Modified by project W519. See drawings H-2-830105 through H-2-830109 for changes.

H-2-88818, sh 2 / Rev 0 / Modified by project W519. See drawings H-2-830105 through H-2-830109 for changes.

Block 20: Other Affected Documents (Cont'd):

H-2-88836, sh 3 / Rev 1 / Modified by project W519. See drawings H-2-830105 through H-2-830109 for changes.

H-2-140321, Sh 1 / Rev 1 / Modified by project W519. See drawings H-2-830093 for project drawing listing.

H-2-140323, Sh 1 / Rev 1 / Modified by project W519. See drawings H-2-830093 for project drawing listing.

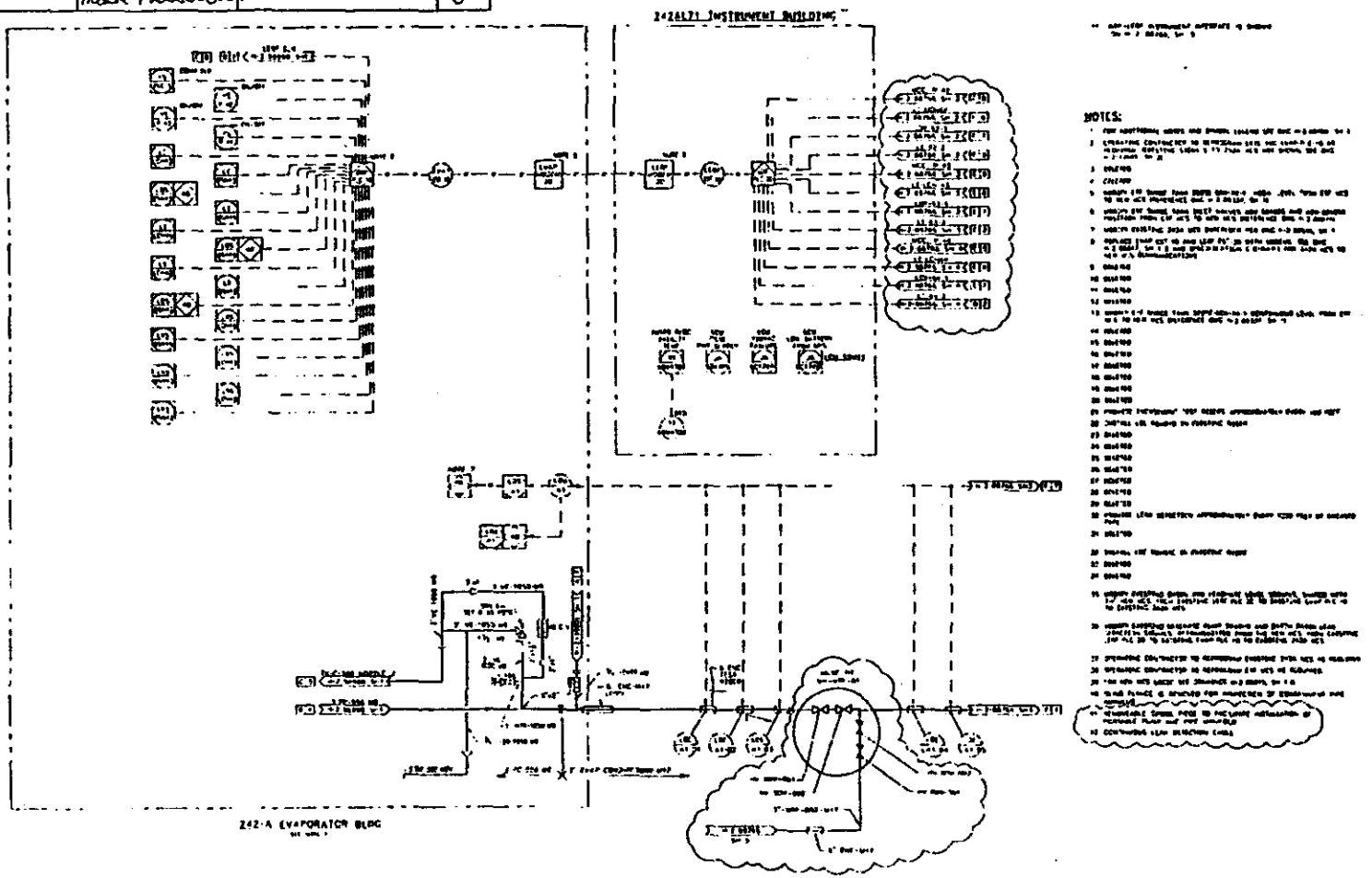
H-2-140342, Sh 1 / Rev 2 / Modified by project W519. See drawings H-2-830093 for project drawing listing. The "J" line ties into the "H" line at N42281.5, W47238.6 at station 1+444.5.

H-2-140377, Sh 1 / Rev 1 / Modified by project W519. See drawings H-2-830093 for project drawing listing.

FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-88766	1	3	CL UHLMAN	Mark Fiedler	648330	5

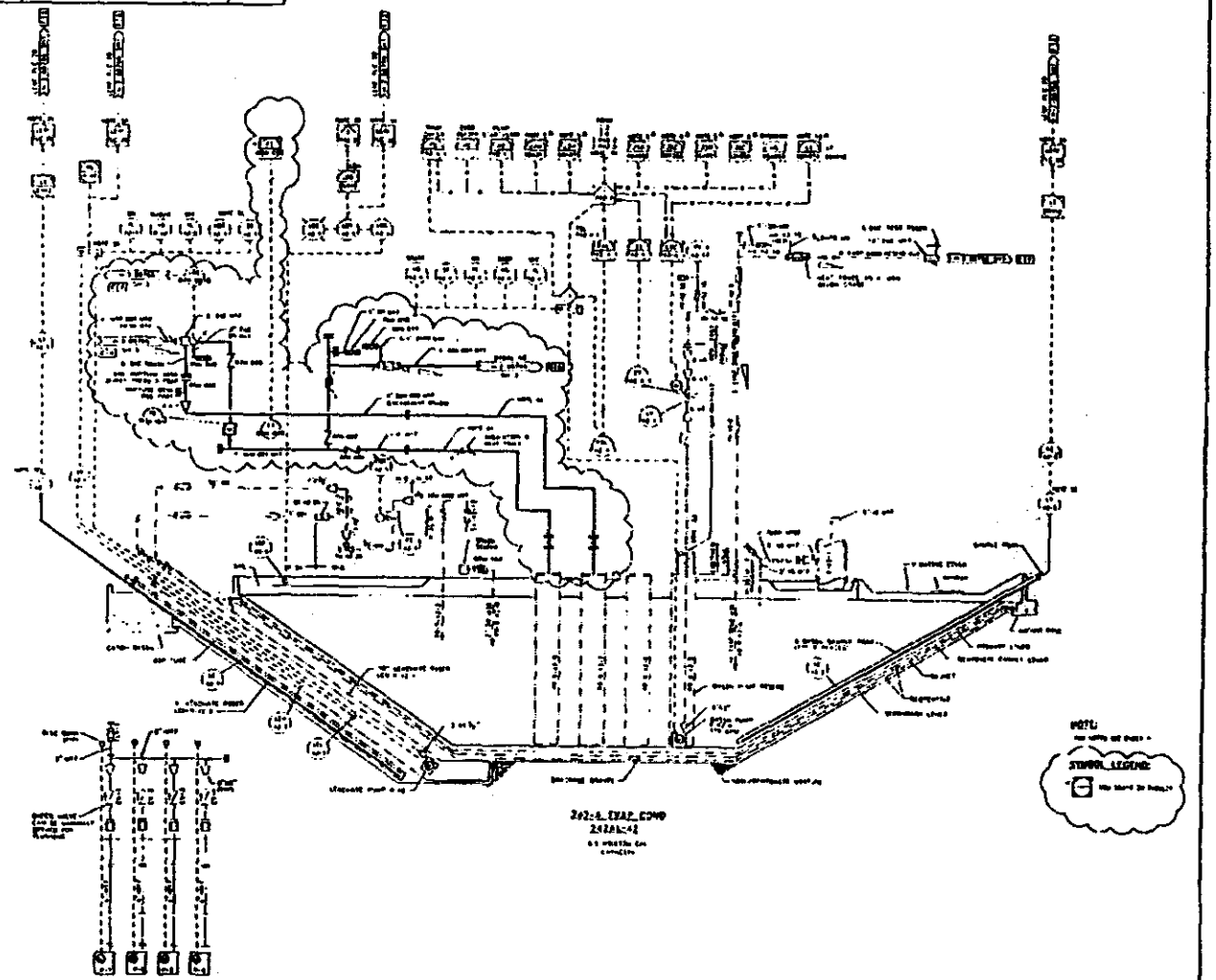
1 MODIFY H-2-88766 SHEET 1 AS SHOWN IN CROSSED AREA

2 RENAME DRAWING TITLE. FROM: 242A - LERF INTERFACE



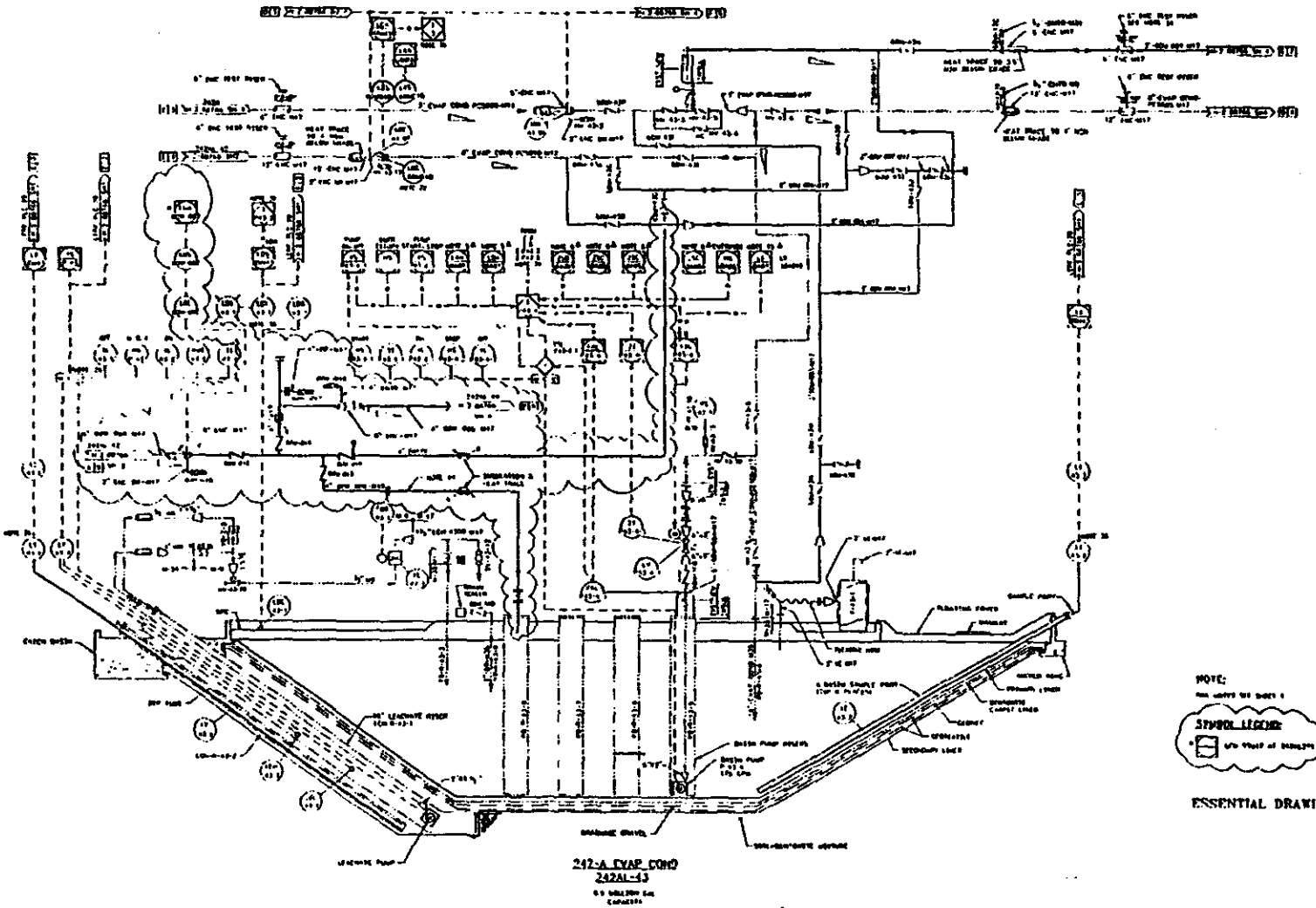
FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg H-2-88766	Sh 2	Rev 5	Prepared By CL UHLMAN	Checked By Mark Friedrich	ECN No 648330	Page 6

ADD TO DRAWING H-2-88766 SH 2 THE ITEMS IN THE CLOUDED AREA



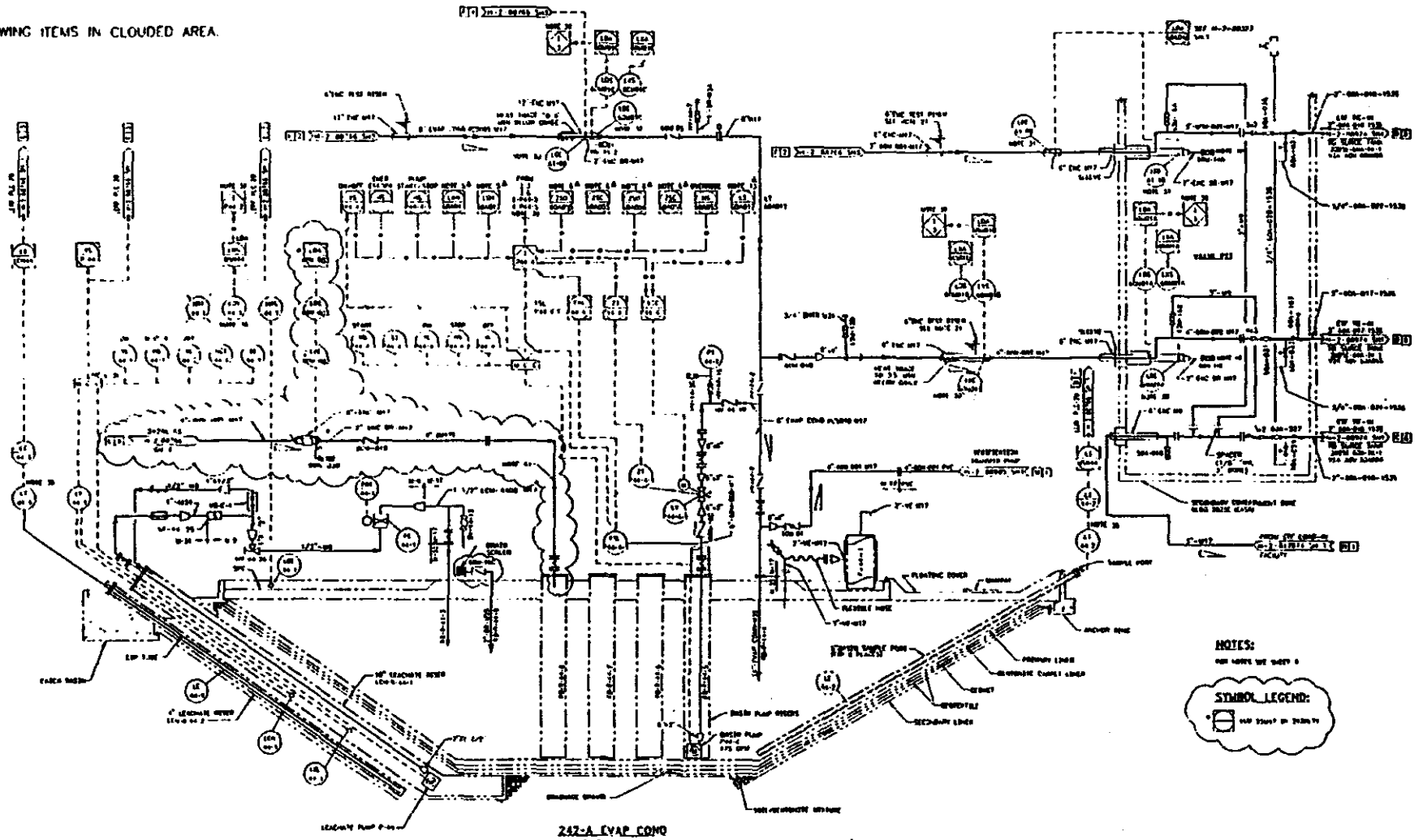
FLUOR FEDERAL SERVICES				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-88766	3	6	CL UHLMAN	Mark Fiedler	648330	17

ADD ITEMS IN CLOUDED AREA AS SHOWN



FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
F-2-88766	4	6	CL UHLMAN	Mark Friedrich	648330	8

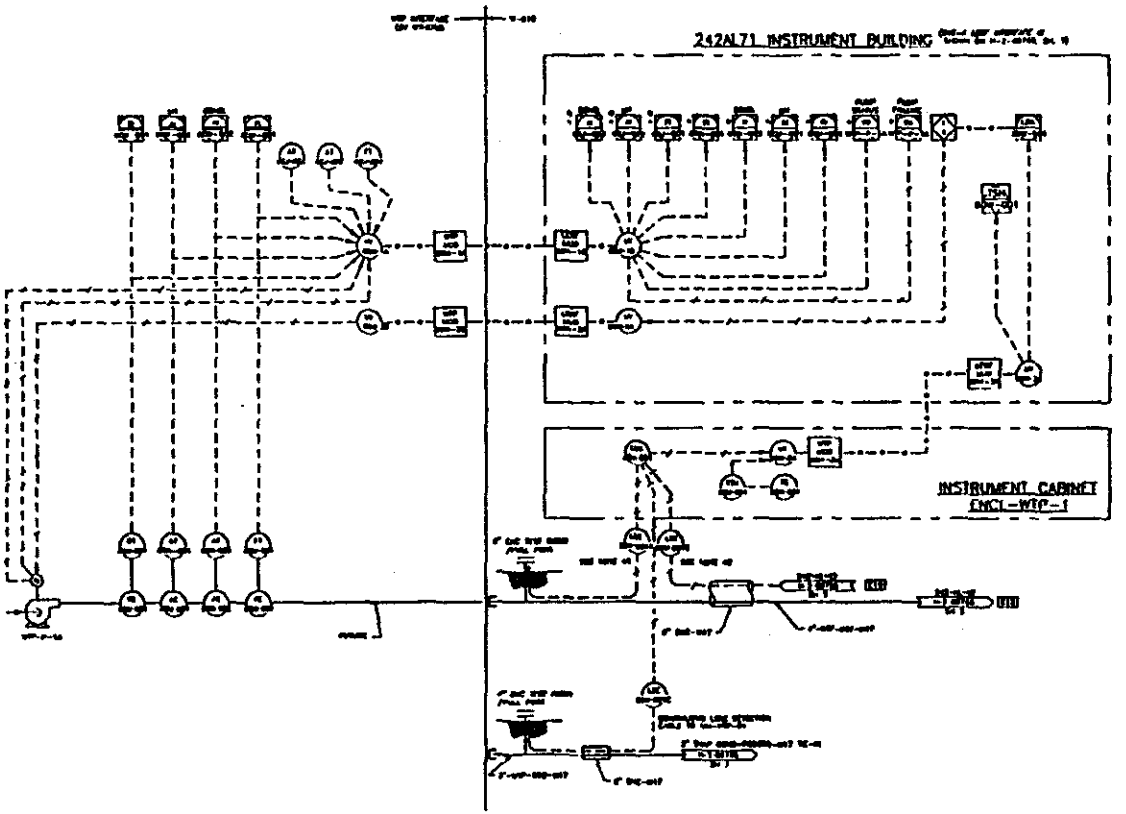
ADD TO DRAWING ITEMS IN CLOUDED AREA.



242-A EVAP COND
242AL-44

FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-88766	5	0	CL UHLMAN	Mark Fiedler	648330	9

1. SUPERSEDES H-2-88766, SH. 5.
2. NEW DRAWING TITLE:
   P&ID, LERF-WTP INTERFACE



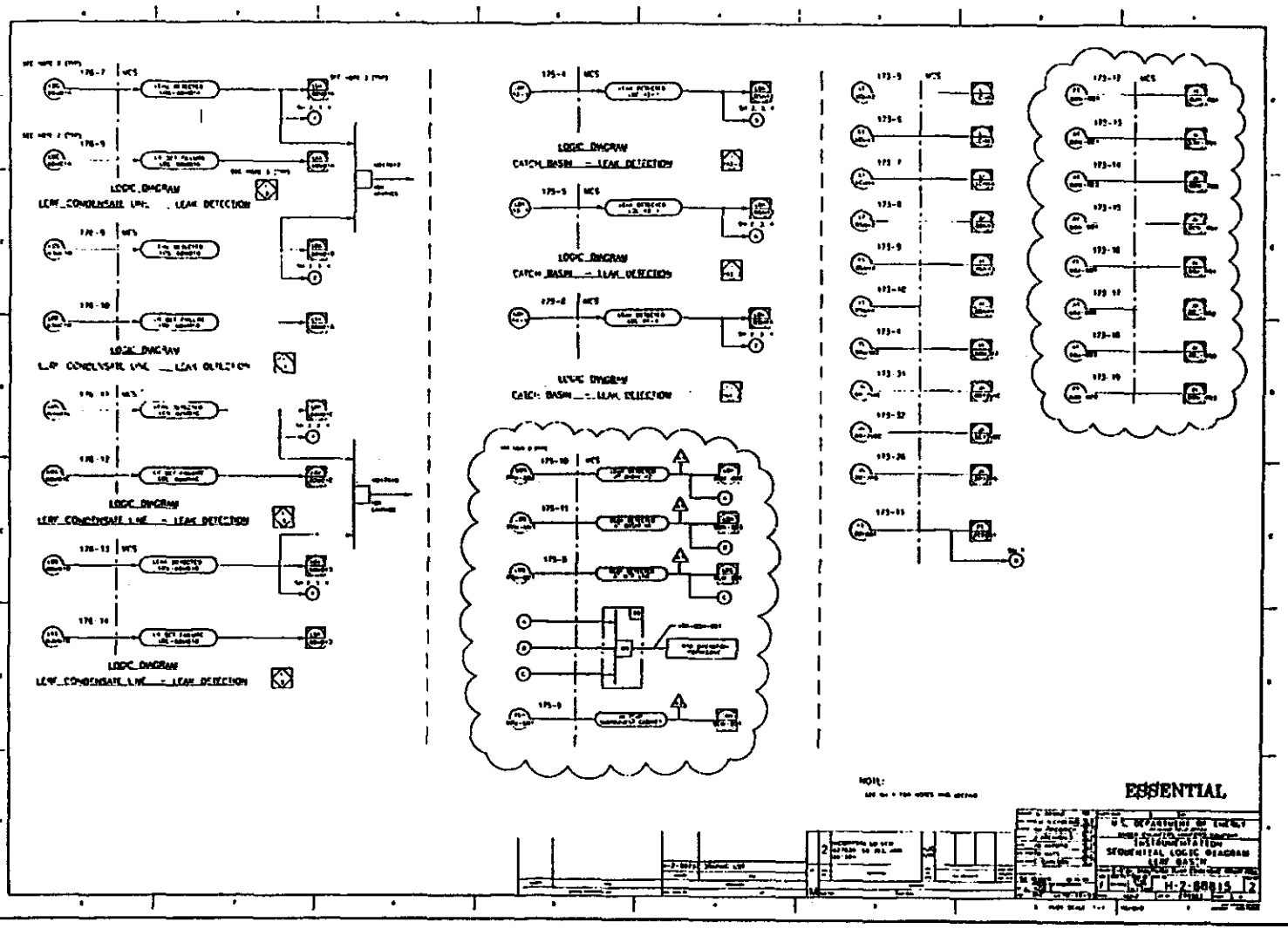
NOTE:

SYMBOL LEGEND

FLUOR FEDERAL SERVICES — ENGINEERING CHANGE NOTICE SKETCH

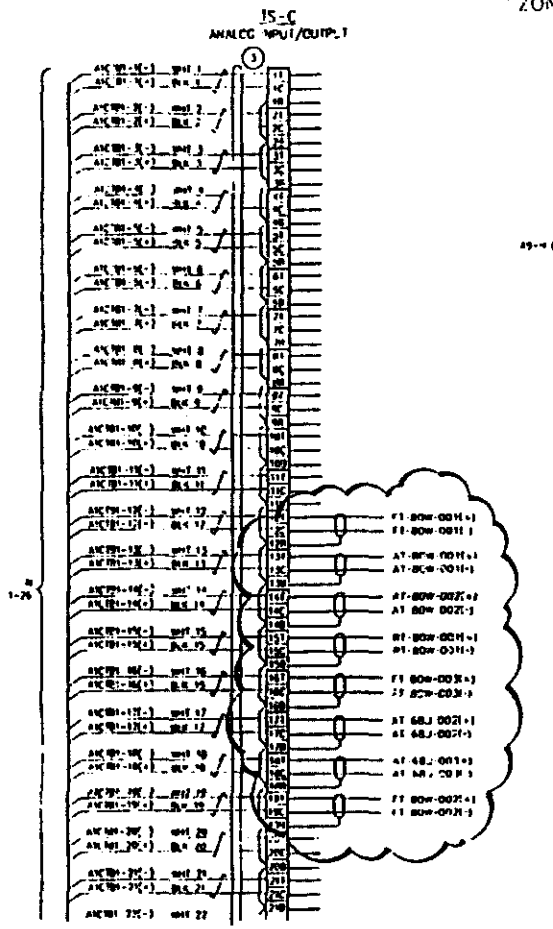
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-88815	5	2	CL UHLMAN	Mark Fiedler	648330	10

ADD CLOUDED AREAS TO H-2-88815, (SHEET 5)

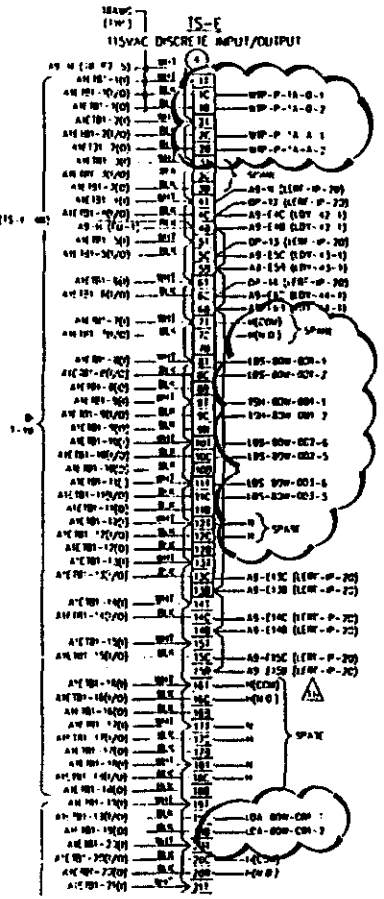


FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-88836	3	1	CL UHLMAN	Mark Friedenich	648330	11
H-2-88818	2	C				

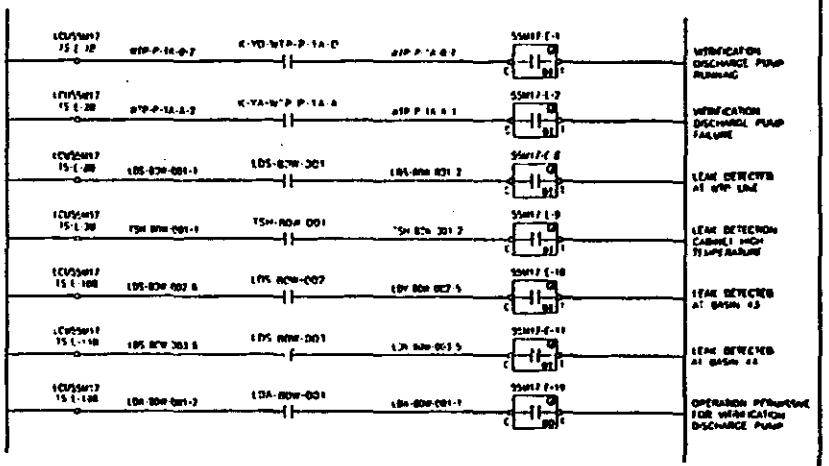
CHANGE H-2 88836,
SH 3, ZONE 7D AS SHOWN



CHANGE H-2-88836, SH 3,
ZONE 5E AND ZONE 3D AS SHOWN

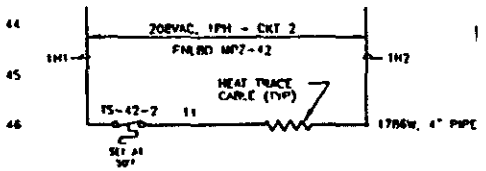


ADD TO H-2-88818, SH 2



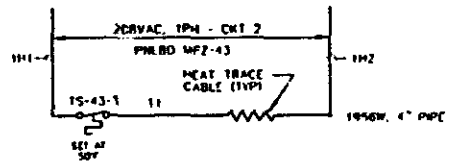
FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By		Page
H-2-79668	5	6	CL UHLMAN	Mark Friedrich	648330	12

ADD TO H-2-79688, SHEET 5)



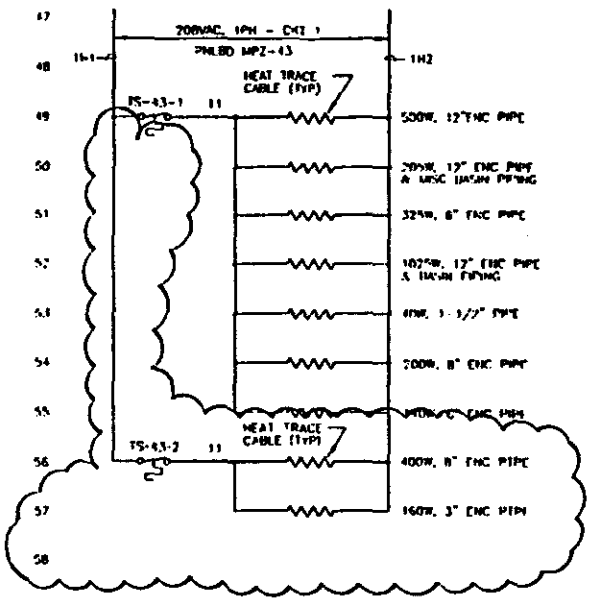
HEAT TRACE ELEMENTARY DIAGRAM
BASIN 242AL-42
(PREFIX WIRE NUMBERS WITH MPZ42-)

MODIFY H-2-79688, SHEET 5, ZONE A4)



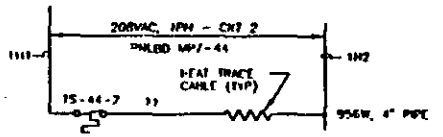
HEAT TRACE ELEMENTARY DIAGRAM
BASIN 242AL-43
(PREFIX WIRE NUMBERS WITH MPZ43-)

MODIFY H-2-79688, SHEET 5, ZONE D4)



HEAT TRACE ELEMENTARY DIAGRAM
BASIN 242AL-43
(PREFIX WIRE NUMBERS WITH MPZ43-)

ADD TO
(H-2-79668, SHEET 5)



HEAT TRACE ELEMENTARY DIAGRAM
BASIN 242AL-44
(PREFIX WIRE NUMBERS WITH MPZ44-)

FLUOR FEDERAL SERVICES					ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No		Page
H-2-85323	1	0	CL UHLMAN	Mark Friedlund	648330		13

ADD TO SHEET 1 OF H-2-85323 AS NOTED

PANELBOARD NUMBER	FORMERLY PNLBD	SHEET NO.	VOLTAGE	PHASE	POWER SOURCE	ONE LINE DWG NO.	PANELBOARD LOCATION	NOTES
W105-DP1	NA	2	480Y/277	3	TRANSFORMER 300 (C6339P)	H-2-79663	242-AL	NEAR SERVICE ROAD, NORTHWEST OF RETENTION BASINS
MPZ-42	NA	3	208Y/120	3	CB 42-2	H-2-79663	242-AL	AT RETENTION BASIN 242M-42, ON ELECTRICAL RACK
MPZ-43	NA	4	208Y/120	3	CB 43-2	H-2-79663	242-AL	AT RETENTION BASIN 242AL-43, ON ELECTRICAL RACK
MPZ-44	NA	5	208Y/120	3	CB 44-2	H-2-79663	242 AL	AT RETENTION BASIN 242AL-44, ON ELECTRICAL RACK
P1	NA	6	208Y/120	3	PANELBOARD W105-DP1, CIRCUIT 8	H-2-79663	242-AL	LOCATED IN OPERATIONS FACILITY (MO-269)
LTG PNL1	NA	[illegible]	208Y/120	3	PANELBOARD P1, CIRCUIT 26	H-2-79663	242-AL	LOCATED IN STORAGE BUILDING, ON EAST WALL
A	NA	8	240/120	1	CU43 1	H-2-79663	242 AL	LOCATED IN INSTRUMENT BUILDING 242AL-71, ON EAST WALL

FLUOR FEDERAL SERVICES	ENGINEERING CHANGE NOTICE SKETCH				
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-85323	3	2	CL UHLMAN	Mark Friedrich	648330	14

CHANGE AND ADD ITEMS AS NOTED IN CLOUDED AREAS BELOW
(H-2-85323, SHEET 3)

PANEL MFG SQUARE-D
PANEL TYPE (MODEL) NF[illegible]
MAIN BRKR TYPE QO (SECONDARY), FAL (PRIMARY)

PANELBOARD: NP2-47 LOCATION: 242N 42 ELECTRICAL RACK VOLTAGE 208Y/120VAC, 3PH, 4W
FED FROM: CB 42-2 ONE LINE DWG NO H-2-79663

NEMA TYPE: 3R ■ MAIN UNLUGGED ■ 60 AMP BUS FEEDER BRKR TYPE: GE TED134075
■ SURFACE MOUNT ☐ LUGS ONLY ☐ 60 AMP MAIN LUGS ☐ GROUND FAULT PROTECTION MAIN BRKR RATING (AIC): 10,000 (SECONDARY), 18,000 (PRIMARY)
☐ FLUSH MOUNT ■ TOP ☐ BOTTOM ■ 60 AMP MLO ■ GROUND BUS ☐ OTHER FEEDER BRKR RATING (AIC): 14,000

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO	CKT NO	BRKR	CKT NO	SYS NO	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
		620			HEAT TRACE		1	15A	2		HEAT TRACE	893				4 EQUIPMENT PROTECTIVE DEVICE WITH 30mA CAPABILITY
			620					15A					893			
				8	LEACHATE FLOW		5	15A	6		LTG, CONV RCPT			480		
		100			LEAK & LEVEL DETECTION		7	15A	8		PIPE JUMPER HT TRACING RCPT	-				
			100		LV P12 T 1		9	15A	10		BASIN CONTR PUMP		199			
				240	DRUM WARMER CFCI RCPT		11	15A	12		SPARE			-		
	SUBTOTAL	720	720	248							SUBTOTAL	893	1092	480		

TOTAL WATTS PHASE A 1613
TOTAL WATTS PHASE B 1812
TOTAL WATTS PHASE C 728
TOTAL 4126

FOR FIELD VERIFICATION STATUS SEE SHEET 1

ESSENTIAL DRAWING

REF NUMBER	TITLE
APPEARANCE	
NEXT USED ON	H-2-85323 SH 1

REV NO	DESCRIPTION	ENGR DATE	CHK BY DATE	DFTG APPROVAL DATE	COG ENGR APPROVAL DATE	OTHER APPROVALS (IF REQ'D)
2	INCORPORATED ECN 654916.	11AM 1/00				

REVISIONS
CADFILE CADCODE

DRAWN	DATE 8/94
CHECKED	
DFTG APVD	
COG ENGR	
APPVD	
APPVD	
APPVD	

U.S. DEPARTMENT OF ENERGY
DOE Field Office, Richland
Westinghouse Hanford Company

PANELBOARD SCHEDULE

SIZE B | BLDG NO 242-N | DWG NO H-2-85323 | REV 2
SCALE NONE | FSK 701730 | SHEET 3 OF

H-2-85323 SH 3 REV 2

FLUOR FEDERAL SERVICES				ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-85323	4	4	CL UHLMAN	Mark Friedel	648330	15

CHANGE AND ADD ITEMS AS NOTED IN CLOUDED AREAS BELOW
(H-2-85323, SHEET 4)

PANEL MFG: SQUARE-D
PANEL TYPE (MODEL): NP215I2I
MAIN BRKR TYPE: QO (SECONDARY), FAL (PRIMARY)

PANELBOARD: MP7-43 LOCATION: 242AL-43 ELECTRICAL RACK VOLTAGE: 208Y/120VAC, 3PH, 4W
FED FROM: CB 43-2 ONE LINE DWG NO: H-2-79663

NEMA TYPE: 3R
■ SURFACE MOUNT
☐ FLUSH MOUNT
■ MAIN BREAKER
☐ LUGS ONLY
■ TOP ☐ BOTTOM
_60_ AMP BUS
_60_ AMP NEUT
■ GROUND BUS
☐ PANELBOARD GROUND FAULT PROTECTION
☐ OTHER

FEEDER BRKR TYPE: GE TED134025
MAIN BRKR RATING (AIC): 10,000 (SECONDARY), 18,000 (PRIMARY)
FEEDER BRKR RATING (AIC): 14,000

REMARKS	SCHEME NUMBER	PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO.	BKR	BKR	CKT NO.	SYS NO.	LOAD DESCRIPTION	PH A	PH B	PH C	SCHEME NUMBER	REMARKS
		1500	1500		HEAT TRACE		1	20A	20A*	2		HEAT TRACE	978	978			* EQUIPMENT PROTECTIVE DEVICE W/ 30mA GROUND FAULT TRIP
				0	LEACHATE FLOW		5	15A	15A	6		LTG. CONV RCPT			440		
		100			LEAK & LEVEL DETECTION		7	15A	15A	8		PIPE JUMPER HT TRACING RCPT	-				
			100		LV-P43-4-1		9A	20A	15A	10		HEAT TRACE		525			
			192		BASIN COVER PUMP		9B	20A	15A	12					525		
				240	DRUM WARMER GFCI RCPT		11	15A									
SUBTOTAL		1600	1792	240								SUBTOTAL	978	1503	965		

TOTAL WATTS PHASE A 2578
TOTAL WATTS PHASE B 3295
TOTAL WATTS PHASE C 1205
TOTAL 7108

FOR FIELD VERIFICATION STATUS SEE ➡ 0

ESSENTIAL DRAWING

REF NUMBER	TITLE
REFERENCE	
NEXT USED ON	H-2-85323 SH 1

4	INCORPORATED ECN-654916.
REV NO	DESCRIPTION

REVISIONS

DRAWN: WJ BENDER 8/94
CHECKED
SEE REVISION 0

U.S. DEPARTMENT OF ENERGY
DOE Field Office, Richland
Westinghouse Hanford Company

PANELBOARD SCHEDULE

SIZE	BLDG NO	FACILITY NO	DWG NO	REV
B	242-AL	7304	H-2-85323	4

SCALE NONE   SHEET 4 OF

FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH		
Ref Dwg	Sh	Rev	Prepared By	Checked By	Page
H-2-85323	5	2	CL UHLMAN	Mark Friedrich 648330	16

CHANGE AND ADD ITEMS AS NOTED IN CLOUDED AREAS BELOW
(H-2-85323, SHEET 5)

PANEL MFG: SQUARE-D
PANEL TYPE (MODEL): NF21512F
MAIN BRKR TYPE: 00 (SECONDARY), FAL (PRIMARY)

PANELBOARD: NP2-44 LOCATION: 242N-44 ELECTRICAL RACK VOLTAGE: 208Y/120VAC, 3PH, 4W
FED FROM: CB 44-2 ONE LINE DWG NO: H-2-79663

NEMA TYPE: 3R ■ MAIN BREAKER 60 AMP BUS
■ SURFACE MOUNT □ LUGS ONLY 60 AMP NEUT
□ FLUSH MOUNT ■ TOP □ BOTTOM ■ GROUND BUS
□ PANELBOARD GROUND FAULT PROTECTION
□ OTHER

FEEDER BRKR TYPE: GE TED134025
MAIN BRKR RATING (AIC): 10,000 (SECONDARY), 15,000 (PRIMARY)
FEEDER BRKR RATING (AIC): 14,000

REMARKS	SCHEME NUMBER	WATTS/HP PH A	PH B	PH C	LOAD DESCRIPTION	SYS NO.	CKT NO	A	B	C	CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	PH B	PH C	SCHEME NUMBER	REMARKS
		785	785		HEAT TRACE		1	15A		20A*			HEAT TRACE	478	478			* EQUIPMENT PROTECTIVE DEVICE W/30mA GRD. MD FAULT TRIP
				0	LEACHATE FLOW		5		15A		6		LTG, CONV RCPT			480		
		100			ITAH & LEVEL DETECTION		7	15A		15A	8		PIPE JUMPER HT TRACING RCPT					
			190		LV P44 & 1		9		15A		10		BASIN SUMP PUMP		192			
				240	DRUM WARMER GFCI RCPT		11	15A		15A	12		SPARE			478		
	SUBTOTAL	885	975										SUBTOTAL	478	670			

TOTAL WATTS PHASE A: 1363
TOTAL WATTS PHASE B: 1645
TOTAL WATTS PHASE C:
TOTAL: 3008

FOR FIELD VERIFICATION STATUS SEE DWG NO H-2-85323 SH 0

ESSENTIAL DRAWING

REF NUMBER	TITLE
REFERENCE	
NEXT USED ON	H-2-85323 SH 1

REV NO	DESCRIPTION	ENGR APPV DATE	REV BY DATE	DRFTG APPV DATE	COG ENGR APPV DATE	COG PROJ MGR APPV DATE	OTHER APPV DATE
2	INCORPORATED ECN-654916	1/09					

REVISIONS

CABINET CHECKED

DRAWN	VJ BENDER	6/94
CHECKED		
ENGR APPV		
COG ENGR		
APPVD		
APPVD		
APPVD		

U.S. DEPARTMENT OF ENERGY
DOE Field Office, Richland
Westinghouse Hanford Company

PANELBOARD SCHEDULE

SIZE	ELEC WD/SKED DRAWING NO		REV
B	242-4L	7384	H-2-85323 2

SCALE NONE | COF 701250 | SHEET 5 OF

FLUOR FEDERAL SERVICES			ENGINEERING CHANGE NOTICE SKETCH			
Ref Dwg	Sh	Rev	Prepared By	Checked By	ECN No	Page
H-2-85323	1	0	CL UHLMAN	Mark Fiedler	648330	17

ADD NEW SHEET 8 TO H-2-85323
IF NEW SHEET IS REQUIRED CHANGE SHEET NUMBER ON SHEET 1 TO READ 1 OF 8

PANEL MFG: SQUARE-D
PANEL TYPE (MODEL): NQOD
MAIN BRKR TYPE: TBD

PANELBOARD: "A" LOCATION: INSTRUMENT BLDG 242AL71 VOLTAGE: 120/240VAC, 1 PH, 3W
FED FROM: CB43-1 ONE LINE DWG NO: H-2-79663

NEMA TYPE: 1 ■ MAIN BREAKER 100 AMP BUS ☐ PANELBOARD GROUND FAULT PROTECTION
■ SURFACE MOUNT ☐ LUGS ONLY AMP NEUT
☐ FLUSH MOUNT ☐ TOP ■ BOTTOM FEED ■ GROUND BUS ☐ OTHER

FEEDER BRKR TYPE: SQUARE-D_NQOD
MAIN BRKR RATING (AIC): TBD
FEEDER BRKR RATING (AIC)

REMARKS	SCHEME NUMBER	WATTS/HP PH A	WATTS/HP PH B	LOAD DESCRIPTION	SYS NO.	CKT NO.		CKT NO.	SYS NO.	LOAD DESCRIPTION	WATTS/HP PH A	WATTS/HP PH B	SCHEME NUMBER	REMARKS
		1817		AC-1		1	20A	2		EUH-1	1300			
			1817							EUH-1		1300		
		110		LIGHTS		5	20A	6		RECEPTACLES	720			
			1400	LCU UPS POWER		7	20A	8		PLC-20		180		
		1250		LCU POWER		9	20A	10		LCU UTILITY	180			
				SPARE		11	20A	12		SPARE				
				SPACE		13		14		SPACE				
				SPACE		15		16		SPACE				
	SUBTOTAL	3177	3217							SUBTOTAL	2200	1480		

A U 100A

TOTAL WATTS PHASE A: 5377
TOTAL WATTS PHASE B: 4697
TOTAL: 10074

ATTACHMENT B, AUTHORIZATION BASES REVIEW FORM

ECN 648330

Part A:

REFERENCE ITEM # ECN-648330

Proposed Change/Discovery (circle one)

APPROVAL DESIGNATOR E T

TITLE Install Effluent Transfer Lines For Future Waste Treatment Plant (W519 Project)

DESCRIPTION:

Effluent transfer lines will be installed to transport liquid waste from the Waste Treatment Plant (yet to be built) to LWPF. Three transfer lines will be installed. Two lines for the radioactive/hazardous liquid waste transporting to LERF basins. One line for the non-rad/non-hazardous waste transporting to the TEDF system.

10-20-00
Originator Signature Date

Part B:

Does the referenced item: (check one)

A.	Increase risk from a hazard - to the workers &/or public beyond that previously analyzed, evaluated, and documented in the Authorization Bases?	NO X Yes/Maybe__
B.	Reduce the reliability or effectiveness of features, controls, procedures, or processes used to mitigate hazards?	NO X Yes/Maybe__
C.	Introduce a hazard not evaluated in the Authorization Bases?	NO X Yes/Maybe__
D.	Reflect new information on existing hazards beyond that currently documented in the Authorization Bases?	NO X Yes/Maybe__

DETERMINATION BASES: Record complete justification and reference information below. Use Attachment 3 for continuations. Maintain with submittal package.

Since the new effluent transfer lines will be capped and isolated from waste sources, installation of these lines does not result in a configuration outside of the existing authorization basis identified within the ASA (HNF-SD-LEF-ASA-002) and the Liquid Effluent Retention Facility Hazard Categorization Report (WHC-SD-LEF-HC-001). The authorization basis documents will be reviewed as part of the effort to support the connection to the future Waste Treatment Plant. Additionally, the waste to be introduced will be evaluated per WMH-331, Section 3.11, New Waste Stream Acceptance at LERF/ETF, which ensures the criteria set in LERF ASA are not exceeded as result of introducing the new feed.

Potential Impact, Item Remains Open	No Impact, ABR Closed	
[]	[x]	10-20-00 Authorization Bases Evaluator Date
[]	[x]	LWPF OSE Team Leader Date

This document is a facility record when completed. Page ___ of

S

ENGINEERING CHANGE NOTICE

ESSENTIAL

Page 1 of 4

1. ECN 656789

Proj. ECN

CPF 13A, 13B, 18

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ☒ Direct Revision ☐ Change ECN ☐ Temporary ☐ Standby ☐ Supersedure ☐ Cancel/Void ☐	KD JUNT/3M500/S6-72/372-2771	☐ Yes ☒ No	1-16-01
	6. Project Title/No./Work Order No. TWRS Privatization Infrastructure Support	7. Bldg./Sys./Fac. No. 242-AL/60M	8. Approval Designator T, E
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) H-2-88766 SH 1, REV 3	10. Related ECN No(s). N/A	11. Related PO No. N/A
12a. Modification Work ☒ Yes (fill out Blk. 12b) ☐ No (NA Blks. 12b, 12c, 12d)	12b. Work Package No. EL-00-00209	12c. Modification Work Completed Design Authority/Cog. Engineer Signature & Date	12d. Restored to Original Condition (Temp. or Standby ECNs only) N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? ☒ Yes ☐ No

SEE PAGE 3 FOR DRAWING CHANGES

NOTE

PIPING, FITTINGS AND JOINTING METHODS ARE TO MEET THE REQUIREMENTS OF PROJECT W-519 PERFORMANCE SPECIFICATION FOR LIQUID EFFLUENT TRANSFER SYSTEM (W-519-P1). INSTALL, INSPECT AND TEST THE NEW PIPING INSTALLATION IN ACCORDANCE W/ ASME B31.3 AND ADDENDA FOR NORMAL FLUID SERVICE PER W-519-P1.

14a. Justification (mark one)	14b. Justification Details
Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const. ☐ Const. Error/Omission ☐ Design Error/Omission ☐	This ECN identifies modification to the existing PC-5000 Transfer Line caused by W519 tie in.

15. Distribution (include name, MSIN, and no. of copies)

KD JUNT	S6-72	1	BA MESSINGER	B4-39	1
JM ISDELL	B4-39	1	EA McNAMAR	S6-72	1
RJ PARAZIN	S5-09	1	JB BENTON	S6-72	1
SP BIGLIN	S6-74	1			
RW SZELMECZKA	S6-72	1			
NJ SULLIVAN	S6-72	1	*advanced copy		
LL LIN*	S6-72	1			
MM TOWNE	S6-74	1			
MA PRZYBYLSKI*	S5-50	1			

RELEASE STAMP

JAN 18 2001

DATE:

STA: 30

HANFORD RELEASE

ID: 15

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): ECN 656789

16. Design Verification Required	17. Cost Impact		18. Schedule Impact (days)
	ENGINEERING	CONSTRUCTION	
☐ Yes	Additional ☐ $ NA	Additional ☐ $ NA	Improvement ☐ NA
☒ No	Savings ☐ $ NA	Savings ☐ $ NA	Delay ☐ NA

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	☐	Seismic/Stress Analysis	☐	Tank Calibration Manual	☐
Functional Design Criteria	☐	Stress/Design Report	☐	Health Physics Procedure	☐
Operating Specification	☐	Interface Control Drawing	☐	Spares Multiple Unit Listing	☐
Criticality Specification	☐	Calibration Procedure	☐	Test Procedures/Specification	☐
Conceptual Design Report	☐	Installation Procedure	☐	Component Index	☒
Equipment Spec.	☐	Maintenance Procedure	☐	ASME Coded Item	☐
Const. Spec.	☐	Engineering Procedure	☐	Human Factor Consideration	☐
Procurement Spec.	☐	Operating Instruction	☐	Computer Software	☐
Vendor Information	☒	Operating Procedure	☒	Electric Circuit Schedule	☐
OM Manual	☐	Operational Safety Requirement	☐	ICRS Procedure	☐
FSAR/SAR	☐	IEFD Drawing	☐	Process Control Manual/Plan	☐
Safety Equipment List	☐	Cell Arrangement Drawing	☐	Process Flow Chart	☐
Radiation Work Permit	☐	Essential Material Specification	☐	Purchase Requisition	☐
Environmental Impact Statement	☐	Fac. Proc. Samp. Schedule	☐	Tickler File	☐
Environmental Report	☐	Inspection Plan	☐	_____	☐
Environmental Permit	☐	Inventory Adjustment Request	☐	_____	☐

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
NA	NA	
POP 60M-002		

21. Approvals

	Signature	Date		Signature	Date
Design Authority	LILLY L LIN	1-17-01	Design Agent	KD JUNT	1-18-01
Cog. Eng.	LILLY L LIN	1-17-01	PE		
Cog. Mgr.	NJ SULLIVAN	1-17-01	QA		
QA			Safety		
Safety			Design		
Environ.			Environ.		
Other	EA McNAMARA	1/16/01	Other		
(INFORMAL DESIGN REVIEW)					
RW SZELMECZKA		1/17/01			

DEPARTMENT OF ENERGY

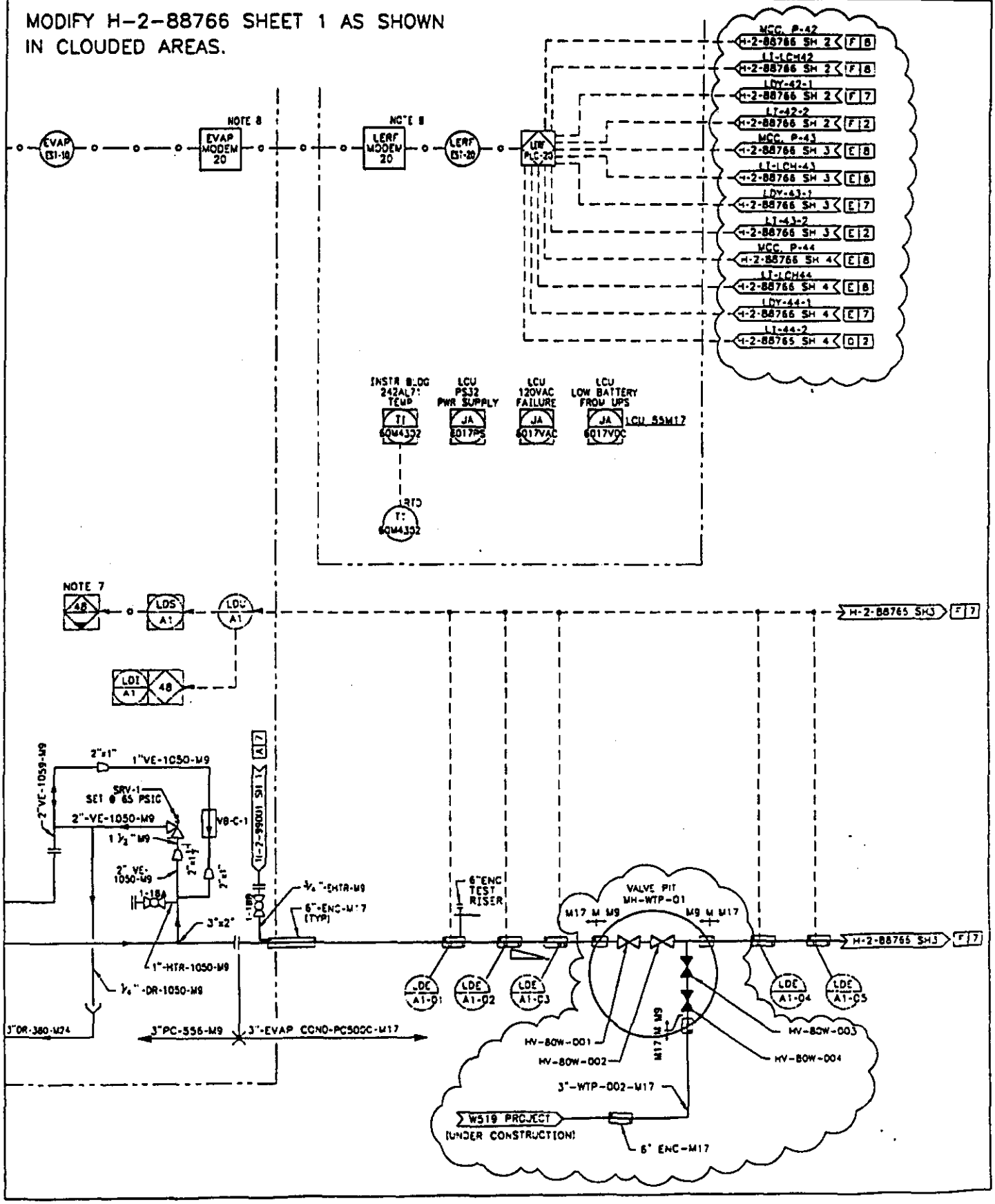
Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

ENGINEERING CHANGE NOTICE CONTINUATION SHEET Page 3 of 4

1. ECN NO. 656789

MODIFY H-2-88766 SHEET 1 AS SHOWN IN CLOUDED AREAS.



ATTACHMENT B, AUTHORIZATION BASES REVIEW FORM

ECN 656789
Page 1 of 4

Part A:

REFERENCE DOCUMENT # ECN-656789 Proposed Change/Discovery (circle one)

APPROVAL DESIGNATOR E T

TITLE Modification to Existing PC-5000 Transfer Line Caused by W-519 Tie-In

DESCRIPTION:

One of the transfer lines being installed by the W-519 project will be tied in to the existing PC-5000 Process Condensate Transfer Line. The new line will serve as a contingency line for the future Waste Treatment Plant. Isolation valves and valve man way will be installed to provide isolation and flow path control. This ECN documents the tie-in for the purpose of plant configuration control for the use of the PC-5000 line.

Originator Signature 1-16-01 Date

Part B:

Does the referenced item: (check one)

A.	Increase risk from a hazard - to the workers &/or public beyond that previously analyzed, evaluated, and documented in the Authorization Bases?	NO X Yes/Maybe__
B.	Reduce the reliability or effectiveness of features, controls, procedures, or processes used to mitigate hazards?	NO X Yes/Maybe__
C.	Introduce a hazard not evaluated in the Authorization Bases?	NO X Yes/Maybe__
D.	Reflect new information on existing hazards beyond that currently documented in the Authorization Bases?	NO X Yes/Maybe__

DETERMINATION BASES: Record complete justification and reference information below. Use Attachment 3 for continuations. Maintain with submittal package.

Since the new effluent transfer line will be capped and isolated from waste sources, installation and tie-in of this line do not result in a configuration outside of the existing authorization basis identified within the ASA (HNF-SD-LEF-ASA-002) and the Liquid Effluent Retention Facility Hazard Categorization Report (WHC-SD-LEF-HC-001). The authorization basis documents will be reviewed as part of the effort to support the connection to the future Waste Treatment Plant. Additionally, the waste to be introduced will be evaluated per WMH-331, Section 3.11, New Waste Stream Acceptance at LERF/ETF, which ensures the criteria set in LERF ASA are not exceeded as result of introducing the new feed.

PABI, Item Remains Open	No Impact, ABR Closed	
[]	[x]	Authorization Bases Evaluator 1-16-01 Date
[]	[x]	LWPF Engineering Manager Date

This document is a facility record when completed. Page ___ of

CPF 1 4 A
CPF 1 3 B
CPF CPF 1 3

ENGINEERING CHANGE NOTICE ESSENTIAL

Page 1 of 3

1. ECN 647209L

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [] Direct Revision [] Change ECN [] Temporary [x] Standby [] Supersedure [] Cancel/Void []	LL Lin/32910/S6-72/372-2759	[] Yes [X] No	December 1, 1998
	6. Project Title/No./Work Order No. Install Hose Adaptors on Basin 42 Sample Ports/Charge # 101697, COA AJ60	7. Bldg./Sys./Fac. No. LERF/60M	8. Approval Designator NA
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) H-2-88766 Sh.2, Rev. 4	10. Related ECN No(s). NA	11. Related PO No. NA

12a. Modification Work	12b. Work Package No.	12c. Modification Work Complete	12d. Restored to Original Condition (Temp. or Standby ECN only)
[X] Yes (fill out Blk. 12b) [] No (NA Blks. 12b, 12c, 12d)	EL-98-00840/L	Design Authority/Cog. Engineer Signature & Date	NA 12/14/98 Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [X] Yes [] No

Install temporary adaptors per Detail I shown on page 3 of this ECN. The adaptors will be installed on Riser 3 and Riser 7 for LERF Basin 42. Install 2" line off the sample ports. Valves 60M-TEMP-1 and 60M-TEMP-2 shall be 2" gate valves or engineering approved equal. Install 1-1/2" pipe nipple down stream of the 2"x 1-1/2" reducer.

Material of construction shall be compatible with rain water at a maximum pressure of 100 psig. Use EPDM gasket or engineering approved equal. Perform in-service leak test on the new installation.

14a. Justification (mark one)

Criteria Change	[]	Design Improvement	[]	Environmental	[X]	Facility Deactivation	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Temporary adaptors are needed to expedite the pumping of the standing water on LERF Basin 42 cover. This water contains radioactivity which is above the limits for discharging to the ground. The adaptors will allow the transfer of the water, using the basin float pump, back to the basin.

15. Distribution (include name, MSIN, and no. of copies)

N. J. Sullivan	S6-72	1	J. M. Petty	S6-74	1
J. M. Isdell	G3-17	1	A. K. Yoakum	S6-72	1
L. L. Lin*	S6-72	1	M. W. Bowman	S6-72	1
WCC Planning*	S6-71	1	B. S. Darling	T4-05	1
C. D. Skogley	T4-05	1	A. F. Crane	S6-72	1
D. L. Flyckt	S6-71	1			

(* = 1 Advance Copy)

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DATE: DEC 02 1998

...A.16 RELEASE ID: 18

A-7900-013-1

ENGINEERING CHANGE NOTICE	Page 2 of 3	1. ECN 647209L

16. Design Verification Required	17. Cost Impact ENGINEERING		CONSTRUCTION		18. Schedule Impact (days) NA
[X] Yes	Additional	[] $	Additional	[] $	Improvement []
[] No	Savings	[] $	Savings	[] $	Delay []

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[NA]	Seismic/Stress Analysis	[NA]	Tank Calibration Manual	[NA]
Functional Design Criteria	[NA]	Stress/Design Report	[NA]	Health Physics Procedure	[NA]
Operating Specification	[NA]	Interface Control Drawing	[NA]	Spares Multiple Unit Listing	[NA]
Criticality Specification	[NA]	Calibration Procedure	[NA]	Test Procedures/Specification	[NA]
Conceptual Design Report	[NA]	Installation Procedure	[NA]	Component Index	[NA]
Equipment Spec	[NA]	Maintenance Procedure	[NA]	ASME Coded Item	[NA]
Const. Spec.	[NA]	Engineering Procedure	[NA]	Human Factor Consideration	[NA]
Procurement Spec.	[NA]	Operating Instruction	[NA]	Computer Software	[NA]
Vendor Information	[NA]	Operating Procedure	[NA]	Electric Circuit Schedule	[NA]
OM Manual	[NA]	Operational Safety Requirement	[NA]	ICRS Procedure	[NA]
FSAR/SAR	[NA]	IEFD Drawing	[X]	Process Control Manual/Plan	[NA]
Safety Equipment List	[NA]	Cell Arrangement Drawing	[NA]	Process Flow Chart	[NA]
Radiation Work Permit	[NA]	Essential Material Specification	[NA]	Purchase Requisition	[NA]
Environmental Impact Statement	[NA]	Fac. Proc. Samp. Schedule	[NA]	Tickler File	[NA]
Environmental Report	[NA]	Inspection Plan	[NA]		[]
Environmental Permit	[NA]	Inventory Adjustment Request	[NA]		[]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

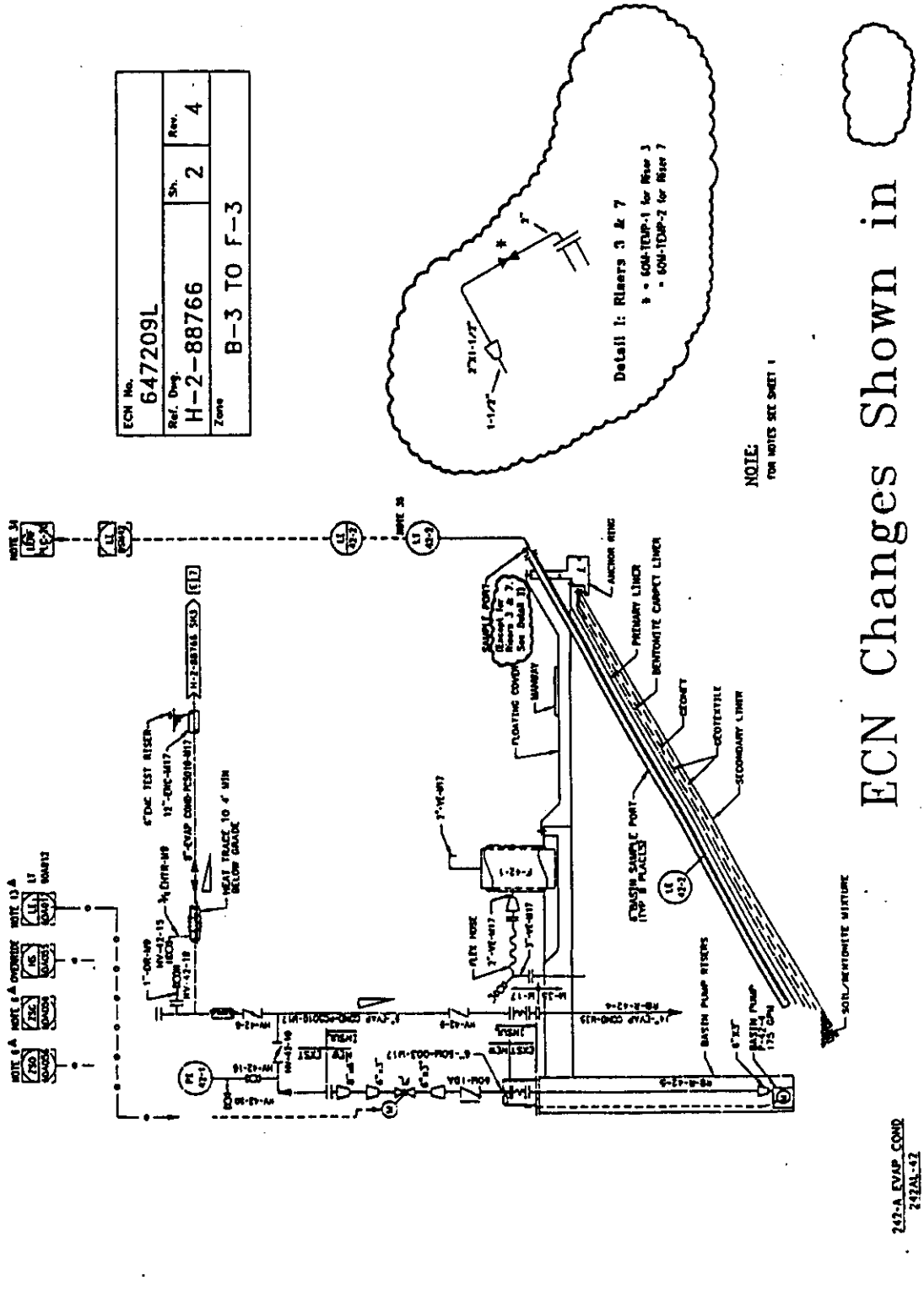
Document Number/Revision	Document Number/Revision	Document Number Revision

No other documents affected by this ECN.

21. Approvals

Signature	Date	Signature	Date
Design Authority - L. L. Lin	12/2/98	Design Agent - L. L. Lin	12/2/98
Cog. Eng. - L. L. Lin	12/2/98	PE	
Cog. Mgr. - N. J. Sullivan	12-2-98	QA	
QA		Safety	
Safety		Design	
Environ.		Environ.	
Other - R. J. Huth (Informal Design Review)	12.2.98	Other	
Operations			
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	Page 3 of 3	1. ECN (use no. from pg. 1) 647209L



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ESSENTIAL

~~EP~~ #18, 13A, 13B
IVFt 4, 7

ENGINEERING CHANGE NOTICE

Page 1 of 5

1. ECN 709380L
Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental ☐ Direct Revision ☐ Change ECN ☐ Temporary ☒ Standby ☐ Supersedure ☐ Cancel/Void ☐	R.A. Wahlquist, 3M200, S6-74, 373-0993	☐ Yes ☒ No	1/27/01
	6. Project Title/No./Work Order No.: LERF Flow switch /101697/AH60	7. Bldg./Sys./Fac. No.: 242AL43	8. Approval Designator: T
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.): see block 13a below	10. Related ECN No(s).: N/A	11. Related PO No.: N/A

12a. Modification Work	12b. Work Package No.	12c. Modification Work Completed	12d. Restored to Original Condition (Temp. or Standby ECNs only)
☒ Yes (fill out Blk. 12b) ☐ No (NA Blks. 12b, 12c, 12d)	EL-00-0692/L	Design Authority/Cog. Engineer Signature & Date	Design Authority/Cog. Engineer Signature & Date

13a. Description of Change — 13b. Design Baseline Document? ☒ Yes ☐ No

Drawings Changed: H-2-88766 sheet 3 rev 6
H-2-88818 sheet 1 rev 2
H-2-89291 sheet 1 rev 2

14a. Justification (mark one)	14b. Justification Details
Criteria Change ☒ Design Improvement ☐ Environmental ☐ Facility Deactivation ☐ As-Found ☐ Facilitate Const. ☐ Const. Error/Omission ☐ Design Error/Omission ☐	Flow switch FSL-P43-4-1 is malfunctioning which shuts down P-43-4. Therefore, FSL-P43-4-1 is jumpered to allow the pump to run. An alarm is being added also to alert operations if a low flow condition exists.

15. Distribution (include name, MSIN, and no. of copies)

M.W. Bowman	S6-72	C.M. Towne	S6-74
T.W. Calihan	S6-71	O.L. Flyckt	S6-71
L.L. Lin	S6-72	J.M. Isdell	G3-17
C.D. Skogley	S6-71	J.L. Foster	S6-71
N.J. Sullivan	S6-72	R.W. Szelmeczka	S6-72

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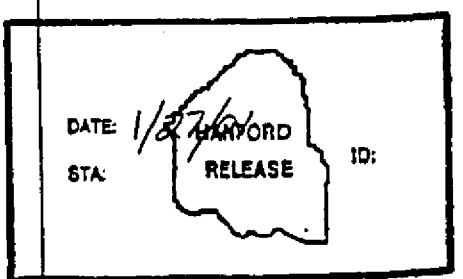


A-7900-013 (05/96)

ENGINEERING CHANGE NOTICE

1. ECN (use no. from pg. 1): 709380L

16. Design Verification Required: [X] Yes [ ] No

17. Cost Impact

	ENGINEERING	CONSTRUCTION
Additional	[N/A] $ N/A	[N/A] $ N/A
Savings	[N/A] $ N/A	[N/A] $ N/A

18. Schedule Impact (days)

Improvement	[N/A] N/A
Delay	[N/A] N/A

19. Change Impact Review: Indicate the related documents (other than the engineering documents identified on Side 1) that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[ ]	Seismic/Stress Analysis	[ ]	Tank Calibration Manual	[ ]
Functional Design Criteria	[ ]	Stress/Design Report	[ ]	Health Physics Procedure	[ ]
Operating Specification	[ ]	Interface Control Drawing	[ ]	Spares Multiple Unit Listing	[ ]
Criticality Specification	[ ]	Calibration Procedure	[ ]	Test Procedures/Specification	[ ]
Conceptual Design Report	[ ]	Installation Procedure	[ ]	Component Index	[ ]
Equipment Spec.	[ ]	Maintenance Procedure	[ ]	ASME Coded Item	[ ]
Const. Spec.	[ ]	Engineering Procedure	[ ]	Human Factor Consideration	[ ]
Procurement Spec.	[ ]	Operating Instruction	[ ]	Computer Software	[ ]
Vendor Information	[ ]	Operating Procedure	[X]	Electric Circuit Schedule	[ ]
OM Manual	[ ]	Operational Safety Requirement	[ ]	ICRS Procedure	[ ]
FSAR/SAR	[ ]	IEFD Drawing	[ ]	Process Control Manual/Plan	[ ]
Safety Equipment List	[ ]	Cell Arrangement Drawing	[ ]	Process Flow Chart	[ ]
Radiation Work Permit	[ ]	Essential Material Specification	[ ]	Purchase Requisition	[ ]
Environmental Impact Statement	[ ]	Fac. Proc. Samp. Schedule	[ ]	Tickler File	[ ]
Environmental Report	[ ]	Inspection Plan	[ ]	_____	[ ]
Environmental Permit	[ ]	Inventory Adjustment Request	[ ]	_____	[ ]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number/Revision
ARP-60A-001		
ARP-60M-001		

21. Approvals

	Signature	Date
Design Authority	Roger Wallquist per telecon MC Teats CM Towne	1/27/01
Cog. Eng.	Roger Wallquist per telecon L Lin CM Towne	1/27/01
Cog. Mgr.	Roger Wallquist per telecon MJ Sullivan	1/27/01
QA		
Safety		
Environ.	—	
Other	Informal Review Signature on File	1/27/01

	Signature	Date
Design Agent	Roger Wallquist per telecon MC Teats CM Towne	1/27/01
PE		
QA		
Safety		
Design		
Environ.		
Other		

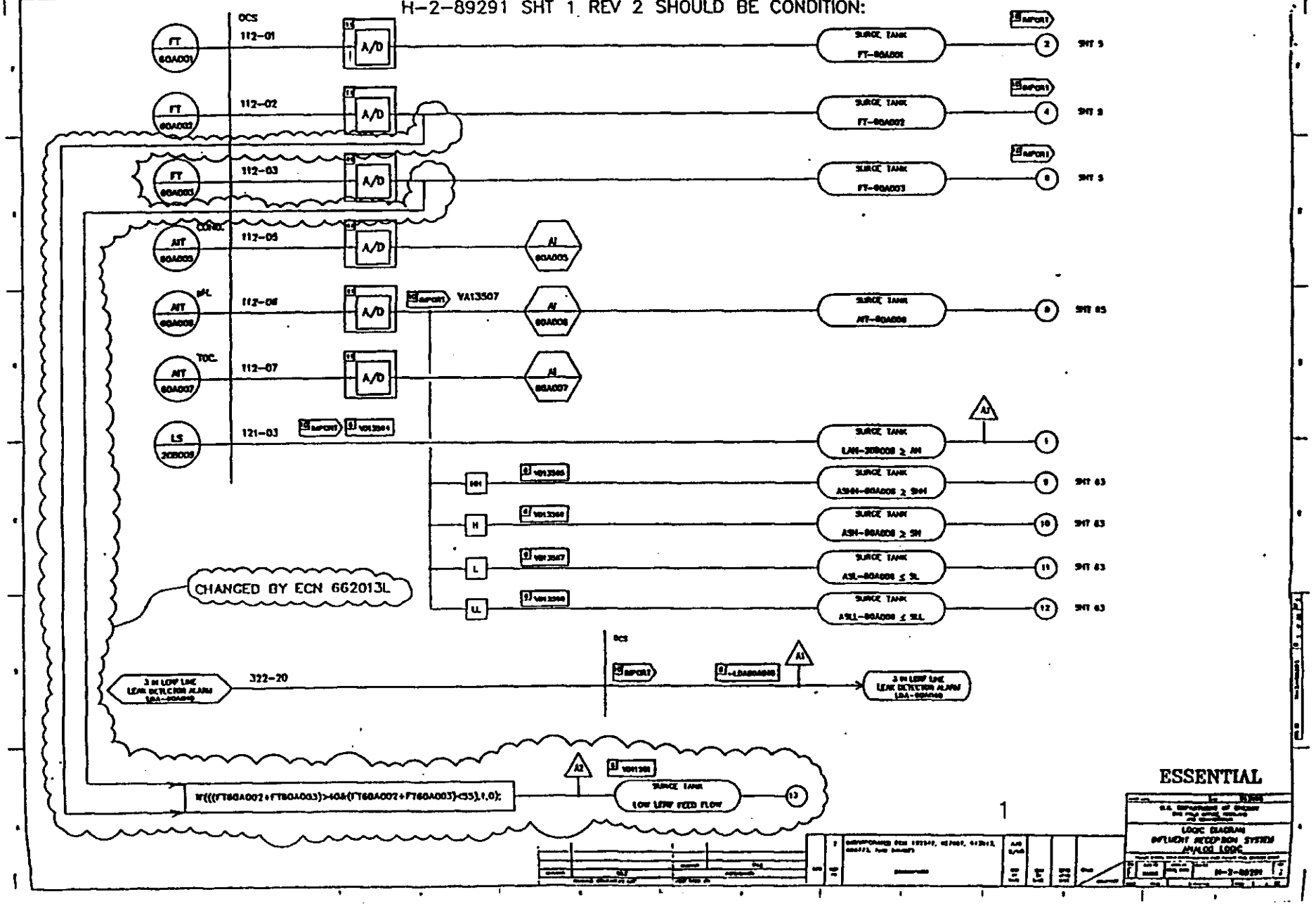
DEPARTMENT OF ENERGY

Signature or a Control Number that tracks the Approval Signature

ADDITIONAL

ENGINEERING CHANGE NOTICE CONTINUATION SHEET		ECN 709380L
	Page 3/5	Date 1/27/01.

H-2-89291 SHT 1 REV 2 SHOULD BE CONDITION:

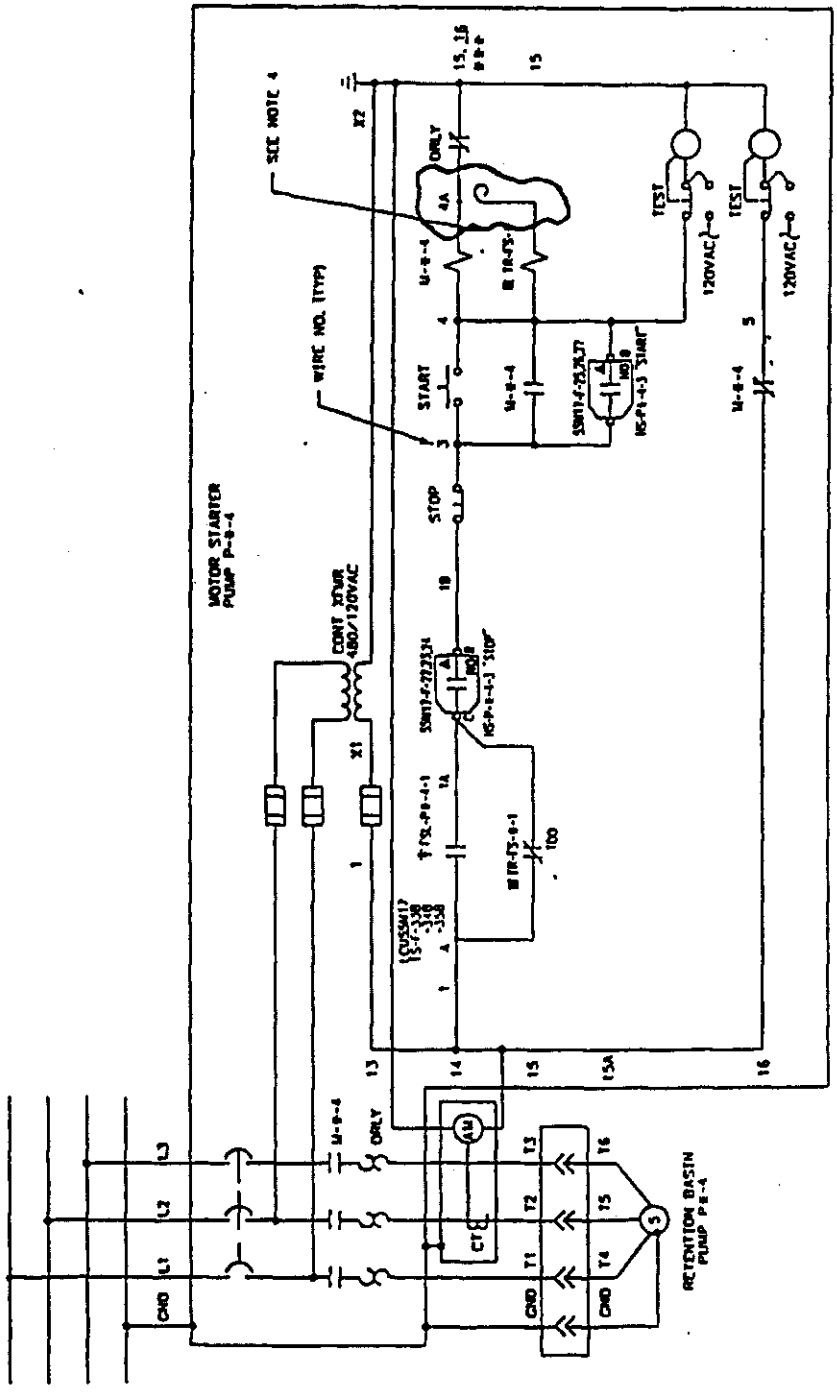


ESSENTIAL

1

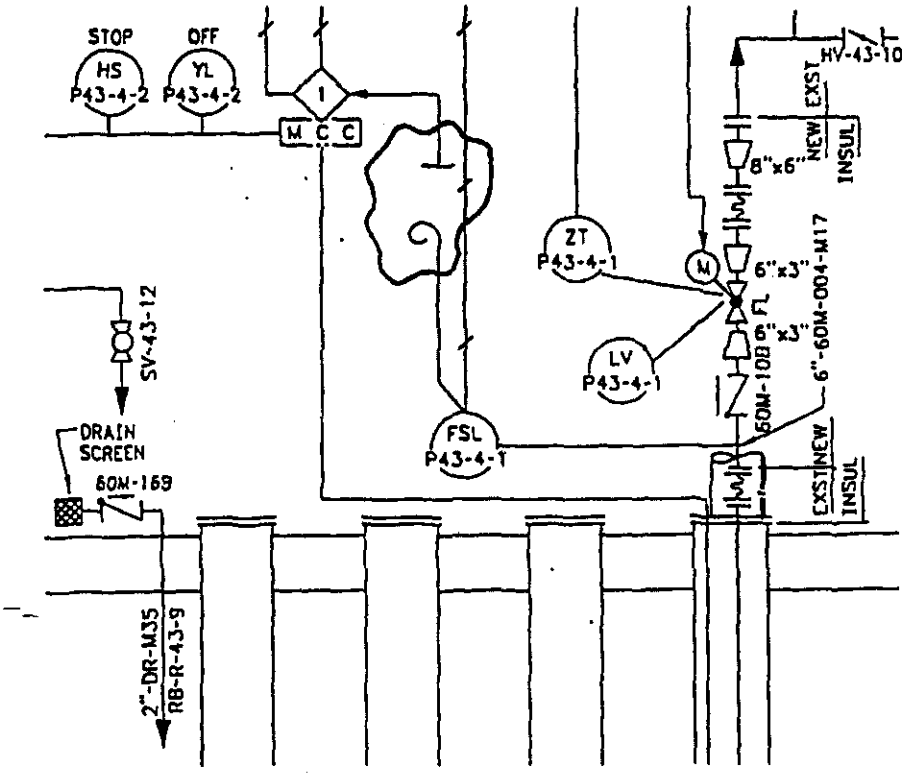
ECN 709380L
Date 1/27/01

H-2-88818, Sheet 1, Rev 2: Remove the coil wire from Time Delay Relay TR-FS-43-1 at terminal 4A as shown below. This will keep FSL-P43-4-1 jumpered out.



ECN 709380L
Date 1/27/01

H-2-88766, Sheet 3, Rev 6: Remove the Flow Switch interlock to the MCC as shown:



S

cpf 15A 6
cpf 15B 1
cpf 15B 1 pt *

ENGINEERING CHANGE NOTICE

ESSENTIAL

Page 1 of 10

1. ECN 658584

Proj. ECN

2. ECN Category (mark one)	3. Originator's Name, Organization, MSIN, and Telephone No.	4. USQ Required?	5. Date
Supplemental [X] Direct Revision [] Change ECN [] Temporary [] Standby [] Supersedure [] Cancel/Void []	H.L. Roach/3M500/S6-72/373-1985	[] Yes [X] No	08/25/00
	6. Project Title/No./Work Order No. Install Drains on 6" And 8" Dualcast Line Leak Detectors/ CACN 101697, COA AJ60	7.Bldg./Sys./Fac.No. 2025E/60M	8.ApprovalDesignator TE
	9. Document Numbers Changed by this ECN (includes sheet no. and rev.) H-2-88766, Rev 6, Sheet 4	10. Relatec ECN No(s). N/A	11. Related PO No. N/A

12a. Modification Work	12b.WorkPackage No.	12c.Modification WorkComplete	12d. Restored to OriginalCondition(Temp.or Standby ECN only)
[x] Yes (fill out Blk. 12b) [] No (NA Blks. 12b, 12c, 12d)	EL-00-00517/M	Design Authority/Cog. Engineer Signature & Date	N/A Design Authority/Cog. Engineer Signature & Date

13a. Description of Change

13b. Design Baseline Document? [x] Yes []No

See attached continuation sheet.

Piping is to be in accordance with ETF Pipe Class Specification, ADTECHS S-136H-001, pipe classes 153T, and Construction Specification C-018H-C6 pipe class M17. Piping shall be fabricated, inspected, and tested per ASME B31.3 for normal fluid service.

14a. Justification (mark one)

Criteria Change	[]	*Design Improvement*	[X]	*Environmental*	[]	*Facility Deactivation*	[]
As-Found	[]	Facilitate Const	[]	Const. Error/Omission	[]	Design Error/Omission	[]

14b. Justification Details

Leak detectors located at the low end of pipelines 4"-60M-002-M17 and 3"-60M-001-M17 have a problem with condensation from the air space in the double containment pipes. The addition of drain valves at the leak detectors will provide for more reliable operation of the leak detectors. Changes are required to the initial design to satisfy operational requirements.

15. Distribution (include name, MSIN, and no. of copies)

KH Bergsman	S6-72	1		CD Skogley	S6-71	1	
MW Bowman	S6-72	1		NJ Sullivan	S6-72	1	
AF Crane	S6-72	1		RW Szelmeczka	S6-72	1	
DL Flyckt	S6-71	1		CM Towne	S6-74	1	
JM Isdell	B4-39	1	*	MJ Warn	S6-71	1	
LL Lin	S6-72	1	*	RH Wight	S6-72	1	
R Mabry	S6-71	1		HL Roach	S6-72	1	*
BA Messinger	B4-39	1	*	(Advance Copy = *)			

RELEASE STAMP

OCT 16 2000

DATE:

STA: 30

HANFORD RELEASE

ID: 18

A-7900-013-2 (05/96) GEF095

A-7900-013-1

ENGINEERING CHANGE NOTICE CONTINUATION SHEET	Page 2 of 10	1. ECN (use no. from pg. 1) 658584

16. Design Verification Required	17. Cost Impact ENGINEERING		CONSTRUCTION		18. Schedule Impact (days)	
[x] Yes	Additional	[NA] $	Additional	[NA] $	Improvement	[NA]
[ ] No	Savings	[NA] $	Savings	[NA] $	Delay	[NA]

19. Change Impact Review: Indicate the related documents(other than the engineering documents identified on Side 1)that will be affected by the change described in Block 13. Enter the affected document number in Block 20.

SDD/DD	[NA]	Seismic/Stress Analysis	[NA]	Tank Calibration Manual	[NA]
Functional Design Criteria	[NA]	Stress/Design Report	[NA]	Health Physics Procedure	[NA]
Operating Specification	[NA]	Interface Control Drawing	[NA]	Spares Multiple Unit Listing	[NA]
Criticality Specification	[NA]	Calibration Procedure	[NA]	Test Procedures/Specification	[NA]
Conceptual Design Report	[NA]	Installation Procedure	[NA]	Component Index	[X]
Equipment Spec.	[NA]	Maintenance Procedure	[NA]	ASME Coded Item	[NA]
Const. Spec.	[NA]	Engineering Procedure	[NA]	Human Factor Consideration	[NA]
Procurement Spec.	[NA]	Operating Instruction	[NA]	Computer Software	[NA]
Vendor Information	[X]	Operating Procedure	[X]	Electric Circuit Schedule	[NA]
OM Manual	[NA]	Operational Safety Requirement	[NA]	ICRS Procedure	[NA]
FSAR/SAR	[NA]	IEFD Drawing	[NA]	Process Control Manual/Plan	[NA]
Safety Equipment List	[NA]	Cell Arrangement Drawing	[NA]	Process Flow Chart	[NA]
Radiation Work Permit	[NA]	Essential Materia Specification	[NA]	Purchase Requisition	[NA]
Environmental Impact Statement	[NA]	Fac. Proc. Samp. Schedule	[NA]	Tickler File	[NA]
Environmental Report	[NA]	Inspection Plan	[NA]		[NA]
Environmental Permit	[NA]	Inventory Adjustment Request	[NA]		[NA]

20. Other Affected Documents: (NOTE: Documents listed below will not be revised by this ECN.) Signatures below indicate that the signing organization has been notified of other affected documents listed below.

Document Number/Revision	Document Number/Revision	Document Number Revision
ARP-60M-001/REV D2	H-2-88812/SHT 3/ REV 2	
H-2-88779/SHT 4/ REV 0	ARP 60A-001	

21. Approvals

Signature	Date	Signature	Date
Design Authority LL Lin (Informal Design Review)	10-10-00	Design Agent HL Roach	10/10/00
Cog. Eng.		PE	
Cog. Mgr. NJ Sullivan	10-12-00	QA	
QA		Safety	
Safety		Design	
Environ. RW Szelmeczka	10/12/00	Environ.	
Other		Other	
Rad Con.			
Operations			
		DEPARTMENT OF ENERGY	
		Signature or a Control Number that tracks the Approval Signature	
		ADDITIONAL	

H-2-88766, SH 4, Zone F2:
Move pipeline label 2"-ENC DR-M17 to location above valve 60M-14D.
Extend 6"-ENC-M17 beyond LDE A1-10.
H-2-88766, SH 4, Zone E2:
Add new pipeline to bottom of 6"-ENC-M17 just below LDE A1-10. Label new pipeline 3/8"-153T.
Add new ball valve on pipeline 3/8"-153T. Label new ball valve 60M-14F.
Add quick connect coupler to end of new pipeline 3/8"-153T.
H-2-88766, SH 4, Zone D2:
Move pipeline label 2"-ENC DR-M17 to location above valve 60M-14E.
Extend 8"-ENC-M17 beyond LDE 60M01A.
Add new pipeline to bottom of 8"-ENC-M17 just below LDE 60M01A.. Label new pipeline 3/8"-153T.
Add new ball valve on pipeline 3/8"-153T. Label new ball valve 60M-14G.
Add quick connect coupler to end of new pipeline 3/8"-153T.

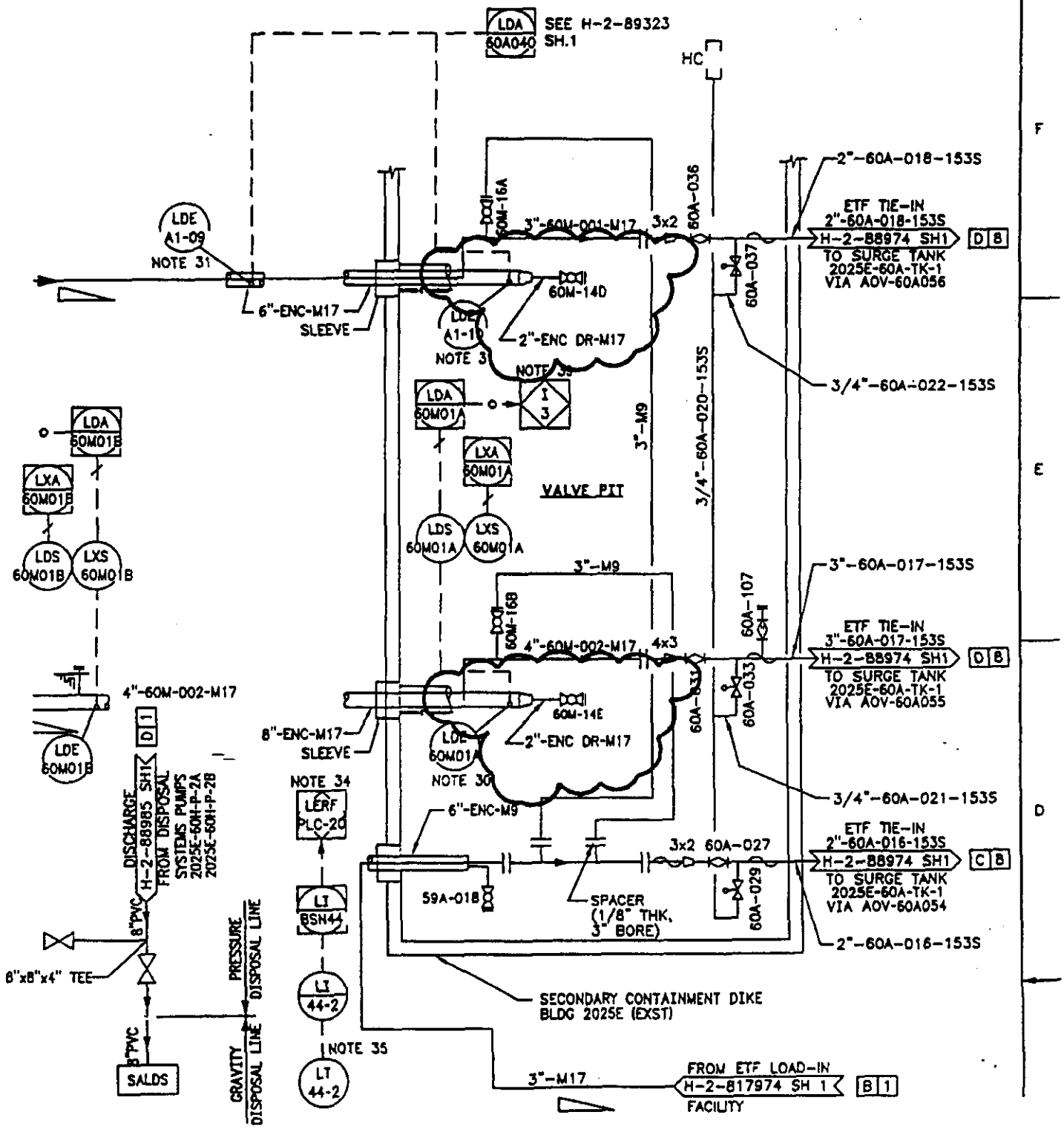
ECN CONSTRUCTION NOTES ONLY.
DO NOT INCORPORATE ONTO DRAWINGS.

1. Use Fibercast Weldfast 440 epoxy adhesive for pipe and pipe fitting joints.
2. Reference the following for installation procedures:

   Pipe Installation Handbook, Fibercast , 1999, Sand Springs, OK

ECN No.	Page
658584	4 OF 10
Ref. Dwg. H-2-88766	Sh. 4 / Rev. 6
Zone AS SHOWN	

"WAS"



ECN No.	Page	
658584	5 OF 10	
Ref. Dwg. H-2-88766	Sh. 4	Rev. 6
Zone AS SHOWN		

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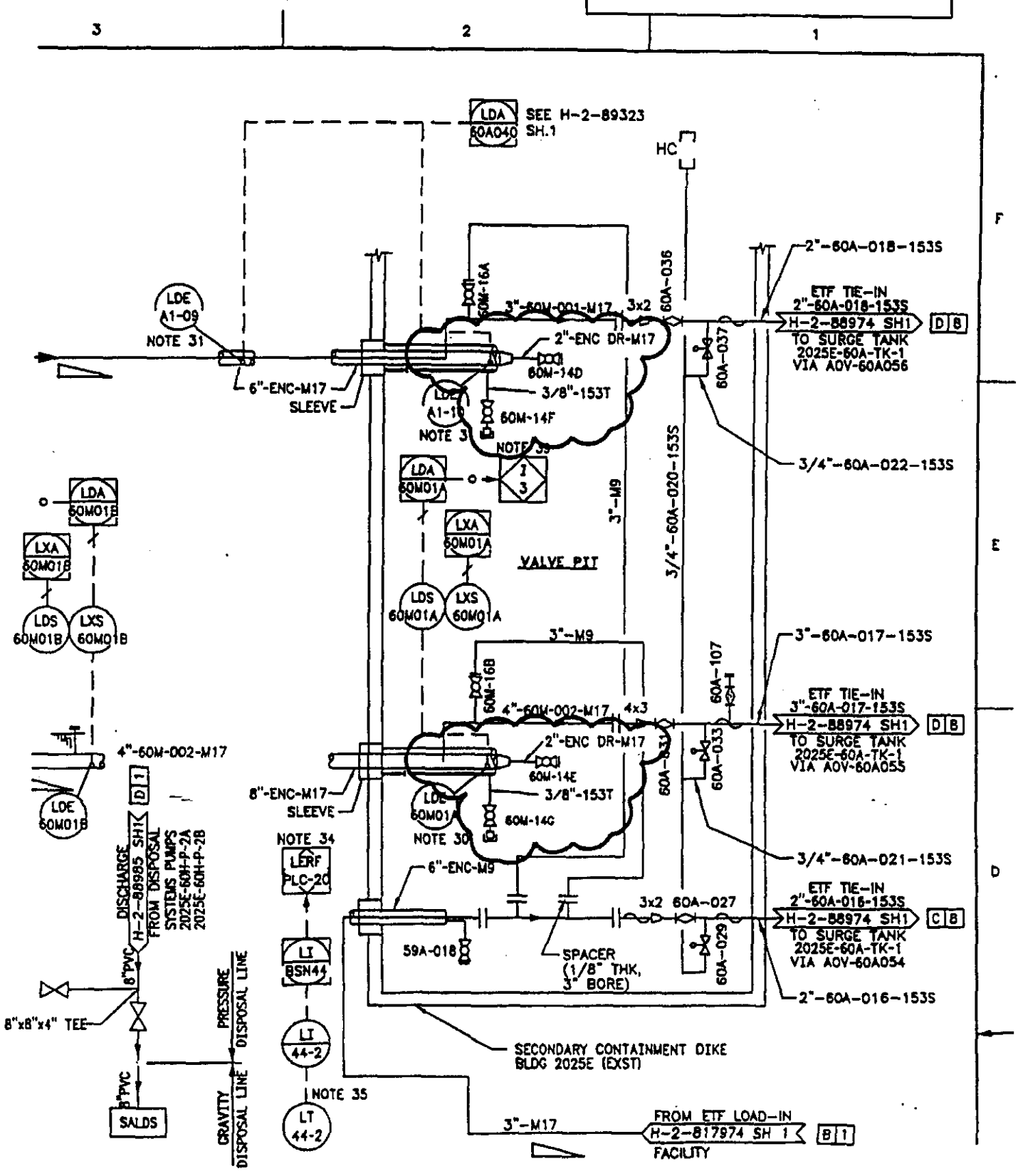
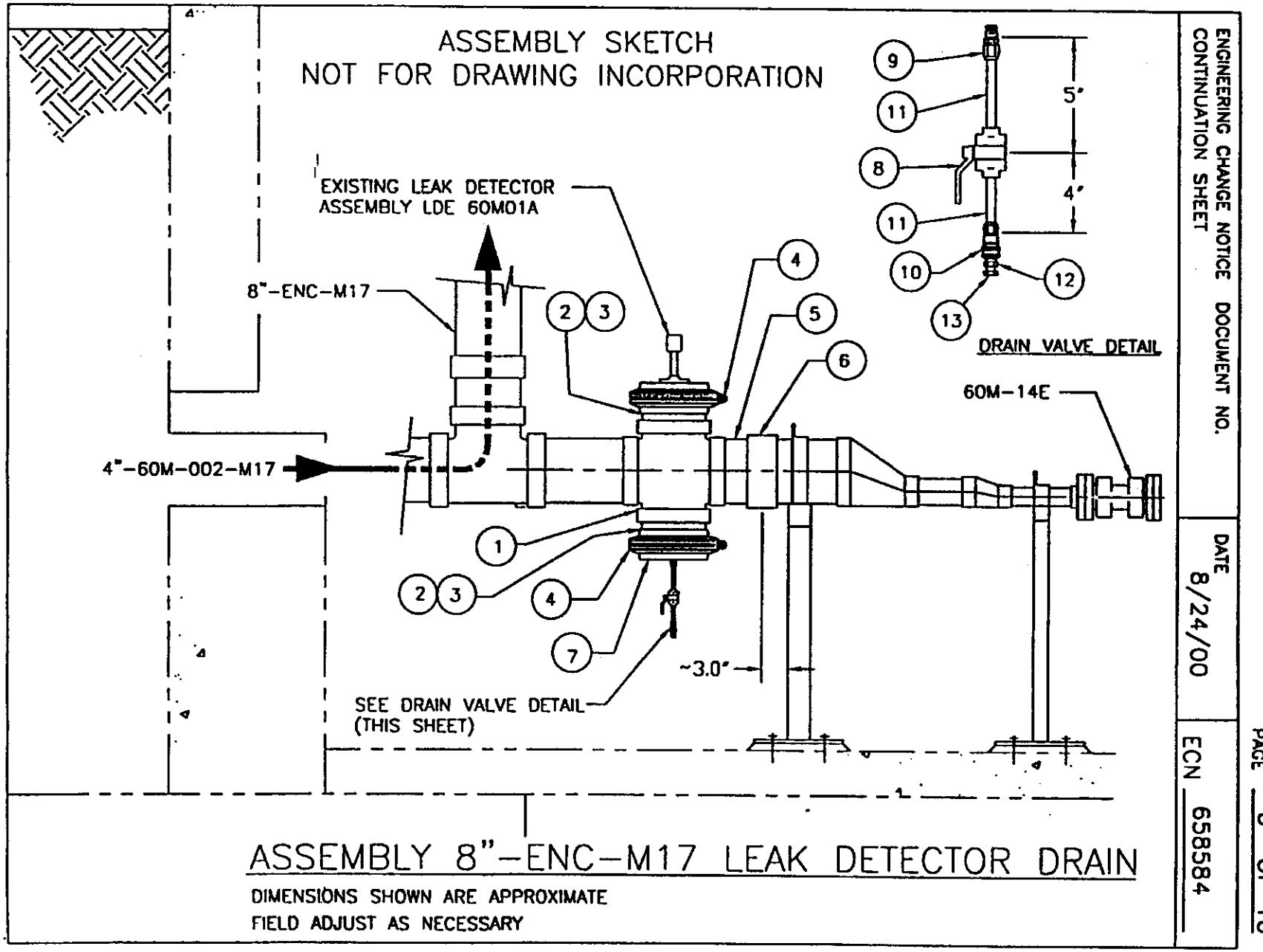




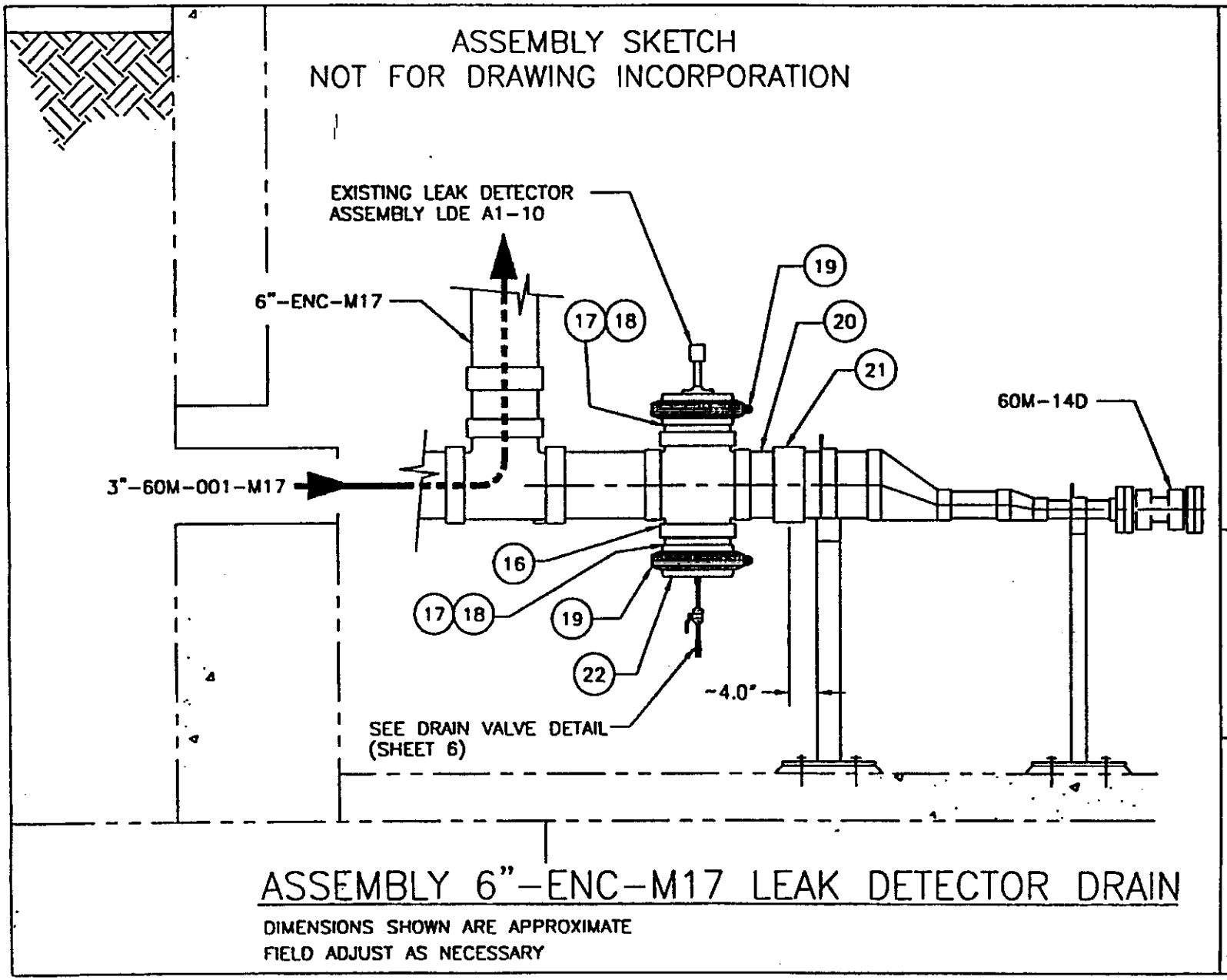
ASSEMBLY 8"-ENC-M17 LEAK DETECTOR DRAIN

DIMENSIONS SHOWN ARE APPROXIMATE
FIELD ADJUST AS NECESSARY

ENGINEERING CHANGE NOTICE DOCUMENT NO.
CONTINUATION SHEET

DATE 8/24/00

ECN 658584



ENGINEERING CHANGE NOTICE DOCUMENT NO.
CONTINUATION SHEET

DATE 8/24/00

ECN 658584

ITEM	QUANTITY	Description	Notes
		ASSEMBLY 8"-ENC-M17 LEAK DETECTOR DRAIN (PAGE 6)	
1	1	8" Cross Pipe Fitting, Socket Type, Fibercast FIG. 285C x 8"	Recommended Vendor for All Fibercast Products: JS Capin Co. Snohomish, WA 1-360-568-8850
2	2	8" Adapter Nipple, Fibercast Fig. 37 x 8"	
3	2	O-ring, AS586A-448, Ethylene Propylene material	
4	2	Clamp, Fibercast FIG. 38 x 8"	
5	~12"	8" Pipe, Fibercast RB-1520	
6	1	Pipe Coupler, Socket Type, Fibercast FIG. 14 x 8"	
7	1	8" Blind Flange, Fibercast FIG. 39S x 3/8", with 3/8" NPT port	
8	2	Whitey Series 60 Ball Valve, Part # SS-62TS6, 3/8" Tube Size, Tube Fitting Connections, 300 Series Stainless Steel (SST)	Recommended Vendor: Seattle Valve and Fitting Co. Attention: Brian Piche (425) 825-1115 (Phone) (425) 825-1705 (FAX)
9	2	Swagelok Male Tube Fitting, 3/8" Tube x 3/8" NPT, 300 Series SST, Part # SS-600-1-6	
10	2	Swagelok QF Series Full Flow Quick Connect tube fitting (Female Part of Coupler), 3/8" Tube Size, Part # SS-QF4-B-600	
11	~24"	3/8" DIA. Seamless Tubing, 316 SST, 0.049 Wall Thickness, ASTM A-269 Type 316.	
12	2	Swagelok QF Series Full Full Quick Connect tube fitting (Male Part of Coupler), Female 3/8" NPT, SS-QF4-S-6PF	
13	2	3/8" NPT pipe plug, 300 Series Stainless Steel	

ASSEMBLY 6"-ENC-M17 LEAK DETECTOR DRAIN (PAGE 7)			
16	1	6" Cross Pipe Fitting, Socket Type, Fibercast FIG. 285C x 6"	Recommended Vendor for All Fibercast Products: JS Capin Co. Snohomish, WA 1-360-568-8850
17	2	6" Adapter Nipple, Fibercast Fig. 37 x 6"	
18	2	O-ring, AS586A-441, Ethylene Propylene material	
19	2	Clamp, Fibercast FIG. 38 x 6"	
20	~12"	6" Pipe, Fibercast RB-1520	
21	1	Pipe Coupler, Socket Type, Fibercast FIG. 14 x 6"	
22	1	6" Blind Flange, Fibercast FIG. 39S x 3/8", with 3/8" NPT port	

Trademarks:

Fibercast - Fibercast Company

ATTACHMENT B - AUTHORIZATION BASES REVIEW FORM
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Part A:

REFERENCE ITEM # ECN-658584 (Proposed Change / Discovery) (circle one)

APPROVAL DESIGNATOR ET

TITLE Install Drains on 6" and 8" Dualcast line Leak Detectors

DESCRIPTION Leak detectors located at the low end of pipelines 4"-60M-002-M17 and 3"-60M-001-M17 have a problem with condensation from the air space in the double containment pipes. The addition of drain valves at the leak detectors will provide for more reliable operation of the leak detectors.

10/10/00
Originator Signature Date

Part B:

Does the referenced item:	(check one)
A. Increase risk from a hazard - to the workers &/or public beyond that previously analyzed, evaluated, and documented in the Authorization Bases?	NO x Yes/Maybe_
B. Reduce the reliability or effectiveness of features, controls, procedures, or processes used to mitigate hazards?	NO x Yes/Maybe_
C. Introduce a hazard not evaluated in the Authorization Bases?	NO x Yes/Maybe_
D. Reflect new information on existing hazards beyond that currently documented in the Authorization Bases?	NO x Yes/Maybe_

DETERMINATION BASES: Record complete justification and reference information below. Use Attachment 3 for continuations. Maintain with submittal package.

Installation of drain valves at the leak detectors will prevent false alarms from the leak detectors installed on the double encapsulated lines from LERF to ETF. Implementation of these changes falls within the existing authorization basis identified within the ASA (HNF-SD-ETF-ASA-001) and the Hazard Categorization for the Effluent Treatment Facility (WHC-SD-C018-HC-002).

PABI, Item Remains Open	No Impact, ABR Closed		
☐	☒	10-11-00 Authorization Bases Evaluator	Date
☐	☐	LWPF OSE Team Leader	Date

APPENDIX 4B

DETAILED DRAWINGS FOR THE 200 AREA EFFLUENT TREATMENT FACILITY CONTAINER STORAGE AREA AND TANK SYSTEMS

Drawings of the secondary containment systems for the ETF containers, and tanks and process units, and for the Load-In Tanks are summarized in Table 4B-1. Because the failure of the secondary containment systems could lead to the release of dangerous waste into the environment, Engineering Change Notices (ECNs) which affect the secondary containment systems will be submitted to the Washington State Department of Ecology, as a Class 1, 2, or 3 permit modification, as required by WAC 173-303-830.

Table 4B-1. Drawing of Effluent Treatment Facility and Load-In Station Secondary Containment Systems

ETF Process Unit	Drawing Number	Outstanding ECNs	Drawing Title
Surge Tank, Process/Container Storage Areas and Trenches - Foundation and Containment	H-2-89063, Sh. 1, Rev. 3	ECN-647892	STRUCT – Foundation and Grade Beam Plan (Sheet 1)
Sump Tank Containment	H-2-89065, Sh. 1, Rev. 3	None	STRUCT – Foundation, Sections and Detail (Sheet 1)
Verification Tank Foundation and Containment	H-2-89068, Sh. 1, Rev. 3	ECN-647892	STRUCT – Verification Tank Foundation (Sheet 1)
Load-In Facility Foundation and Containment	H-2-817970, Sh. 1, Rev. 1	ECN-641703 ECN-647247 ECN-649104	Structural – ETF Truck Load-in Facility Plans and Sections (Sheet 1)
Load-In Facility Foundation and Containment	H-2-817970, Sh. 2, Rev. 1	ECN-641703 ECN-649104	Structural – ETF Truck Load-in Facility Sections and Details (Sheet 2)

P&ID - piping and instrumentation diagram.
STRUCT - architectural/structural diagram.

The drawings identified in Table 4B-2 provide an illustration of the piping and instrumentation configuration for the major process units and tanks at the ETF, and the Load-In Tanks. Drawings of the transfer piping systems between the LERF and ETF, and between the Load-In Station and the ETF also are presented in this table. These drawings are provided for general information and to demonstrate the adequacy of the design of the tank systems. An update to these drawings and drawings identified in Table 4B-1 will be provided annually to the Washington State Department of Ecology.

Table 4B-2. Drawings of Major Process Units and Tanks at the Effluent Treatment Facility and Load-In Station.

ETF Process Unit	Drawing Number	Outstanding ECNs	Drawing Title
Load-In Facility	H-2-817974, Sh. 1, Rev. 12	None	P&ID – ETF Truck Load-In Facility (Sheet 1)
Load-In Facility	H-2-817974, Sh. 2, Rev. 0	None	P&ID – ETF Truck Load-In Facility (Sheet 2)
Surge Tank	H-2-89337, Sh. 1, Rev. 13	ECN-644244	P&ID – Surge Tank System (Sheet 1)
UV/Oxidation	H-2-88976, Sh. 1, Rev. 9	ECN-647245	P&ID – UV Oxidizer Part 1 (Sheet 1)
UV/Oxidation	H-2-89342, Sh. 1, Rev. 7	ECN-647245	P&ID – UV Oxidizer Part 2 (Sheet 1)
Reverse Osmosis	H-2-88980, Sh. 1, Rev. 10	None	P&ID – 1st RO Stage (Sheet 1)
Reverse Osmosis	H-2-88982, Sh. 1, Rev. 12	None	P&ID – 2nd RO Stage (Sheet 1)
IX/Polishers	H-2-88983, Sh. 1, Rev. 11	ECN-642800	P&ID – Polisher (Sheet 1)
Verification Tanks	H-2-88985, Sh. 1, Rev. 9	None	P&ID – Verification Tank System (Sheet 1)
ETF Evaporator	H-2-89335, Sh. 1, Rev. 14	ECN-641719 ECN-653080L ECN-651583	P&ID – Evaporator (Sheet 1)
Thin Film Dryer	H-2-88989, Sh. 1, Rev. 17	ECN-648765 ECN-656781L	P&ID – Thin Film Dryer (Sheet 1)
Transfer Piping from LERF to ETF	H-2-88768, Sh. 1, Rev. 1	None	Piping Plan/Profile 4"– 60M-002-M17 and 3"-60M-001-M17 (Sheet 1)
Transfer Piping from Load-In Facility to ETF	H-2-817969, Sh. 1, Rev. 1	ECN-W291-015 ECN-641703 ECN-649104	Civil – ETF Truck Load-In Facility Site Plan (Sheet 1)

P&ID - piping and instrumentation diagram.
STRUCT - architectural/structural diagram.

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